amateur radio

VOL. 43, No. 6 JUNE 1975

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COVER PHOTO

This interesting photo shows much of the works of the exciting new Atlas transceiver. An AR review appears on page 19.

Photo: Barrie Bunning

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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KENWOOD/TRIO TS 520 5 BAND SSB TRANSCEIVER

Specifications

Frequency Range: 80 metre band — 3.50 to 4.00 MHz; 40 metre band — 7.00 to 7.30 MHz; 20 metre band — 14.00 to 14.35 MHz; 15 metre band — 21.00 to 21.45 MHz; 10 metre band — 28.00 to 28.50 MHz, 28.50 to 29.10 MHz, 29.10 to 29.70 MHz; WWV — 10.00 MHz.

Mode (Receive only) USB, LSB, CW.
Input Power: 160 watts on 80 to 15 metre band, 140 watts on 10 metre band.
Nett amateur prices:

TS 520 $550.00 with PTT Mike

YAESU MUSEN FT101B

SSB/AM 240V AC & 12V DC operation,
160-10m transceiver **$585**

RINGO AR-2

135-175 MHz. Antenna has 3.75 dB gain **$27**

YAESU FT/FP200 TRANSCEIVER P.S.U. COMBINATION $475

MIDLAND 13-870D 5 WATT

AM, 23 channel, 11 metre transceivers, 12V DC operation **$105**

5 WATT

SSB/AM, 23 channel, 11 metre transceivers, 12V DC operation **$210**

144-148 MHz TWO METRE EQUIPMENT

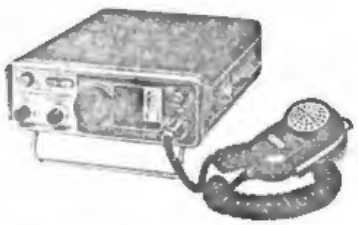
NOW WITH 6 CHANNELS

KEN KP-202, 2W, 144 MHz band. FM. Hand held transceiver with crystals for 6 channels, Ch. 40-50, R1, R2, R3, R4 **$155**

KCP-2 NICAD battery chargers & 10 Nicad batteries **$35**

Genuine leather carrying case for KP-202 **$8**

Ask for a package deal price



TRIO MOBILE TR7200C

2 METRE FM TRANSCEIVER
22 Channels, fitted with Ch. 1 and 4 repeaters. Technical Data: Transmit 10 and 1 watt positions. Max. freq. deviation +15 kHz. Spurious response —60dB. Receiver less than 1W for 30 dB SW selectivity. 20 kHz at 60 dB down; 40 kHz at 70 dB down.
$235 — Extra Channel Crystals $10 Set

BARLOW WADLEY XCR30 Mk. II RECEIVER — LATEST MODEL $269

RF AMPLIFIER AM-4306/GRC

Originally used in conjunction with PRC10 which covers 30-75 MHz FM. Requires 1-4 watts drive and gives a nominal 25 watts out. Brand new in sealed box with complete service and user manuals.
$45 each

RF SIGNAL GENERATOR Model TE-20D

SPECIFICATIONS

Dial has 7 separate band TE-20D covers 120 kHz - 500 MHz.
(6 Fundamental Bands & 1 Harmonic Band)
Freq. Accuracy: +or—2%
Audio Output: to 8 volt
Internal Modulate: 400 Hz approx.
Tube: 12BH7A, 6AR5
Power Source: 105 - 125V, 220 - 240V AC 50/60 Hz, 12 watts.

TE-20D employs a xtal socket and can be used as below:

a.—Self-Calibration. b—Marker Generator
Small size — Space saving.
Printed Circuit for a uniform characteristics.
Dimensions: 140 x 215 x 170 mm. Weight: 2.8 kg.

Price $52.50. P&P $2.00

DELUXE Model TE-22D

AUDIO GENERATOR

SPECIFICATION

Freq. Range: Sin: 20Hz-200kHz
Square: 20Hz-25kHz
Output Voltage: Sine: 7 volt.
Square: 7 volt
Output Impedance: 1000 ohm
Frq. Accuracy +3% + 2Hz
Distortion: Less than 2%
Tube Complement: 6BM8 12 AT7, 6Z4
Power Source: 105-125, 220-240V AC, 50/60 cps. 19W
With Attenuation Range
4 Ranges—1/1, 1/10, 1/100, 1/1K

$63.50

GRID DIP METER Model TE-15

SPECIFICATION

Freq. Range: 440kHz-280MHz in 6 Coils
A Coil 0.44—1.3MHz
B Coil 1.3—4.3MHz
C Coil 4.14MHz
D Coil 14.40MHz
F Coil 120-280MHz
Transistor: 3 TRs & 1 Diode
Meter: 500uA Fs.
Battery: 9V (BL-006P)
Dimensions: 180x80x40 mm
Weight: 730g

Price $39.50
P&P $1.00

amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA, FOUNDED 1910

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QSP

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Copy is required by the **third of each month.** Acknowledgment may not be made unless specially requested. All important items should be sent by certified mail. The Editor reserves the right to edit all material, including Letters to the Editor and Hamads, and reserves the right to refuse acceptance of any material, without specifying any reason.

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Advertising material should be sent direct to **P.O. Box 150, Toorak, Vic., 3142,** by the **25th of the second month preceding publication. Phone: 24-8652.**

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Greetings to the rest of Australia from the VK6 division. VK6?? Where is that?

We are the other third of this great continent to the West of you where most of the mineral wealth of our great country is mined. This is the home of the black swan and the mythical sand groper. There is a small but thriving amateur body, some 300 of which belong to the West Australian Division of the WIA.

Aside from the regular activities, which include ATV, repeater operation and RTTY, there is the embryo of what promises to be the finest radio museum in Australia. The WA VHF group, a sister organisation, has been steadily collecting and restoring both small and large items and slices of Australia's and West Australia's pioneer radio history. The Melville City Council has been busy restoring the old transmitting hall and developing park lands around Wireless Hill, both historic landmarks in their own right, as the heart of the project.

Amateur activity spreads from the North to the South. Our Northern frontiers are represented by Keith, VK6KC, at Kuri Bay and Father Basil, VK6NA, at Kalumburu Mission. Extending further afield we have the boys on Christmas and Cocos Islands. To the South we have the virile and active Southern Electronics Group. This body runs a hamfest, which has become an annual tradition, to which members from all over the state travel to enjoy some of our finest scenery and comradeship.

Despite rumours we are a friendly folk and welcome visitors from the underprivileged Eastern areas. So . . . if you survive the trip over that fast diminishing unsealed stretch of road approaching the WA border, what about dropping in on one of our meetings on the 3rd Tuesday of every month.

A. M. AUSTIN VK6MA
Divisional President

DARWIN RELIEF FUND

	$
Amount already acknowledged	92.00
WIA Queensland Division	45.00
R.C. Dowe, VK2RP	5.00
A. V. Giles, VK2ZGA	10.00
WIA Tasmanian Division, N. Zone	9.20
WIA Blue Mountains Sections	25.00
W. N. Hart, VK5KQ	10.00
J. Van Staveren, VK7JV	5.00
R. V. Ramm, VK4RO	6.50
	$207.70

Thank you. It is known that some other monies have been collected for the Darwin Relief Fund. Could these please be remitted to the Executive Office as soon as possible please, together with any further donations so that the Executive can give thought to the manner of distribution and for whom aid is most required. If anyone has any specialised knowledge about names of amateurs for whom some relief is desirable would he please write in at once with details.

FINAL SMOOTHED SUNSPOT NUMBERS

In a circular received from the I.P.S., the final smoothed sunspot numbers for July 1973 are quoted as follows—

1973		1974	
July	37.4	January	32.7
August	36.1	February	34.4
September	34.4	March	34.0
October	32.6	April	33.8
November	31.8	May	34.6
December	31.5	June	34.5

A FEW IONOSPHERIC PREDICTIONS FOR JUNE (all times are GMT)

VK2 to G seems possible on 20 metres short path about 23.00h and long path 22 to 00.00h with VK3 to G-land 19-22h short path and the same as VK2 for long path. Perth to G seems more problematical a short path but 07-08h and around 00.00h for long path. However Perth to G-land looks better on 7 MHz short path from 18-23h whereas for VK2 on the same band short path looks likely about 19-21.00h.

VK2 to W1 on 14 MHz looks possible around 03.00 and on 7 MHz from 06-11.00h. VK6 to W1 looks rather dismal — maybe an hour or so about 9-11.00h on 7 MHz but little if anything on 14 MHz.

On all bands from 21 MHz upwards the charts show large blank spaces except to VK0 and local hauls. Darwin shows up as offering something on 21 MHz as also does the N-S path from most areas (e.g. VK7 to J). None of the charts shows anything much for 28 MHz.

RADIO SCOUTING

New terms in the language come and go but perhaps Radio Scouting is one which may stay. It could take over from that abbreviation JOTA which is a reminder of the notepad upon which to jot down a few mnemonics. It would be a great pity however if the word Jamboree left by the wayside. "Last year" we read in the 17th Report "we mentioned the amazing growth of 'Radio Scouting' — the extension of JOTA into the normal scout programme throughout the year . . . we can safely forecast that this section (giving examples of Radio Scouting as opposed to a one hit report on JOTA) will grow steadily year by year".

QSP

IN THIS ISSUE

This issue of AR contains 36 pages, but even so I was not able to include everything I wanted.

June issue was to be exclusively VK6. However, the tremendous pressure for space in the pages of AR precluded this. (At present there are sufficient articles to fill the next 8 issues!)

AR is more than a technical magazine — it is also a news magazine.
In addition to the VK6 articles, an equipment review, and a topical article on a repeater identifier, you will find some important news and information.

As well as the many regular news columns, make sure you read the Executive Annual Report, balance sheet and statistics, the Federal Convention report, Project Australia, and the many QSP paragraphs.

This is Australian amateur radio, happening now.

It concerns you — Are you concerned?

BILL ROPER VK3ARZ

NEW PREFIX
REF advises all IARU sister societies that during May 1975 French Radio Amateurs will use the prefix TK to celebrate the golden jubilee of the foundation of R.E.F. Thus F6XYZ will be able to use TK6XYZ. The REF also advises that its QSL bureau is located at 2 Square Trudaine 75009 Paris, France.

IT CAN'T BE TRUE!
QST for Mar '75 gives the latest Honour Roll for DXCC being the top ten numerical totals. Over 630 stations are listed ranging from 321/354 down to 312/315. The first figure is the participants' total countries less any credits given for deleted countries whilst the second numeral represents the total credits including deleted countries. Only 2 VK stations appear in the list compared with 6 ZLs. The two VKs are VK4QM at 320/351 and VK5MS at 314/342. This seems a numerically poor performance for Australasia.

IMPORT LICENSING
Many amateurs will be aware of all the various problems which arise when a country feels compelled to impose import licensing to conserve overseas funds or for other essential reasons. "Break-In" for March '75 gives some guidelines to amateurs in New Zealand for the purchase of equipment requiring an import licence. Apparently the idea is not to stop the importation of amateur equipment but to reduce it. If nothing else import licensing can help the home brewers.

CALL SIGN INFORMATION
Is your call sign correct in the Institute's membership records? Have you acquired your licence in the past year or two and not advised your Division or the Executive Office of the new call sign? It is known that many call signs have been acquired or changed but nothing has been notified by the member. Please remember that the WIA Call Book call sign details derive from Radio Branch records but WIA membership details derive from the members themselves.

SUNSPOT NUMBERS
The Swiss Fed. Observatory, Zurich, quotes a smoothed mean for September 1974 of 32.1. The provisional mean sunspot number for March 1975 is 12.0 and predictions of the smoothed monthly sunsopt numbers for the next few months are 19 for April 1975 dropping by one each month to 14 for September 1975. The smoothed mean for August 1974 was 33.1 and the revised figure for July 1974 was 34.0.

PREFIXES FOR AMSTERDAM
During 1975 Amsterdam will be celebrating the 700th jubilee and a special station manned by amateurs of VRZA in Amsterdam will be on air from time to time with the call PA700ASD (Papa Alpha seven hundred Alpha Sierra Delta). QSL cards for this will go via P.O. Box 400 Rotterdam, the Dutch QSL Bureau. Also all amateurs living in Amsterdam may change their prefix to PA7 during 1975. An Award is also on offer for the above. Details supplied by VRZA

AT THE 1975 WIA ANNUAL CONFERENCE (Report on page 28)

L to R: Laurie VK4ZGL, Norm VK4NP, Colin VK5HI, Ian VK5QX, and Neil VK5NE.

L. to R: Peter VK3ZPA, Eddie VK1VP, VK1YS, Ian VK2ZIU, Andrew VK3FJ, Russell VK3NT and Michael VK3BDL.

L to R: Ian VK5QX, Neil VK5NT, Peter VK7PF, Peter Dodd VK3CIF (Federal Manager), Keith VK3YQ, David Wardlaw VK3ADW (Federal President), Ken VK3ACS, Peter VK3ZPA, and Eddie VK1VP.

The ST-5 RTTY Demodulator

VK6 DIVISION

This demodulator unit comprises two type 709c linear integrated 'op amps', one used as a limiter and the second as a trigger stage, which in turn switches a Motorola MJE-340 transistor used as a keyer for the tele-printer. This transistor switches the printer from mark to space.

It has a balanced linear discriminator for 850 Hz and 170 Hz shift, switchable from the front panel giving the operator a choice of 2125/2975 tones or 1275/2125 tones for mark/space, and a tuning meter is provided along with take off points for an oscilloscope if preferred.

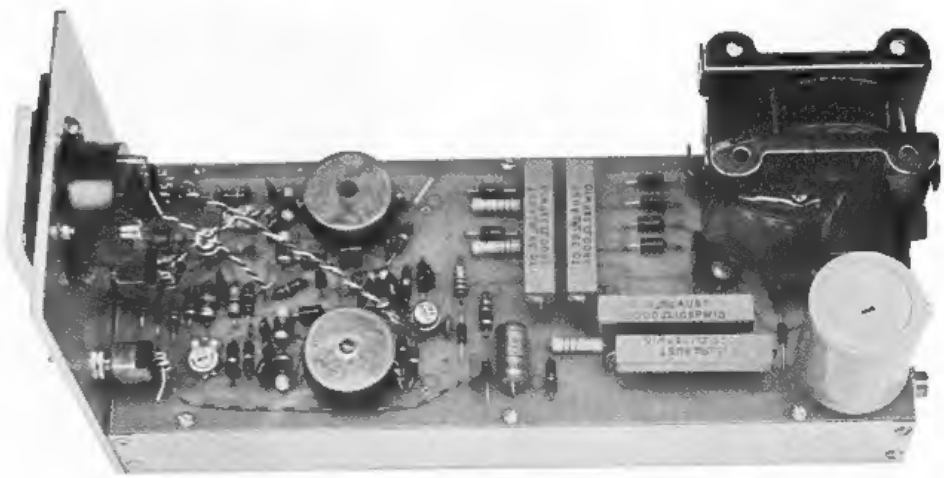
Also included on the front panel is a Normal/Reverse switch, a Standby/Run switch, Mains On/Off, Indicator Lamp and CW Jack. The unit is complete with all Power Supplies for the Demodulator, and for driving the Tele-printer Magnet itself. These are mounted to the rear of the unit and can be seen in the photo of the top of chassis, i.e. Transformer, Magnet supply Smoothing Capacitor and dropping resistors, while in the photo of the underside of chassis shows the smoothing capacitors of the demodulator supply.

On the rear of the chassis there are the audio input, FSK, and Printer Jack Sockets along with fuse and CW Shift Control. The complete unit is housed in a dark grey metal case, and is 5 in. high x 4 in. wide x 10½ in. deep, these dimensions being less the feet.

It is proposed at a later date to make add-on units to produce auto-start and anti-space, along with an oscilloscope unit to be added in the same case.

The complete kit for the unit is available from the VK6 Division of the WIA, PO Box N1002, Perth 6001, as follows:

(a) ST5 Kit complete — $70.00 post paid. The kit comprising metal case, chassis panel, meter bezel and panel decal, printed circuit board, mains transformer, all diodes, transistors, and ICs, meter, set of resistors, capacitors, plugs, jacks, etc., with instructions and board layout.
(b) Printed circuit board and layout — $4.50 post paid.
(c) Mains transformer to suit board — $10.70 post paid.
(d) Case chassis and all metal work — $9.50 post paid.
(e) Set of diodes, transistors and ICs — $10.00 post paid.
(f) Set of toroids — $2.00 post paid. ■



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FT-101 Technical Notes

A. M. Keightley VK6XY
212 Serpentine Road, Albany, 6330

Quite a number of earlier FT101 owners have been rather perturbed to have reports of being off frequency on some bands, when the clarifier is off or centred correctly and the preset controls have been set up correctly.

Investigation showed the culprit to be the crystal conversion oscillator on the RF Board. This oscillator is coupled to both Rx first mixer and Tx second mixer, and it appears that they reflect a different load on the oscillator, causing the pulling. This can easily be checked by listening to the

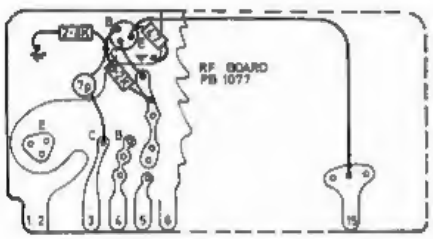


FIGURE - 1

crystal frequency on another receiver with BFO on, while pressing the PTT switch and listen to the frequency shift.

All is not lost, the condition can be corrected fairly easily by installing an emitter follower transistor as a buffer for the oscillator. This is most easily achieved by removing the RF Board and fitting the extra components as indicated in Fig. 1 showing portion of the circuit side of PB 1077. Fig. 2 shows the circuit of the addition.

At present the output from the oscillator taken from a link on T111 by a small

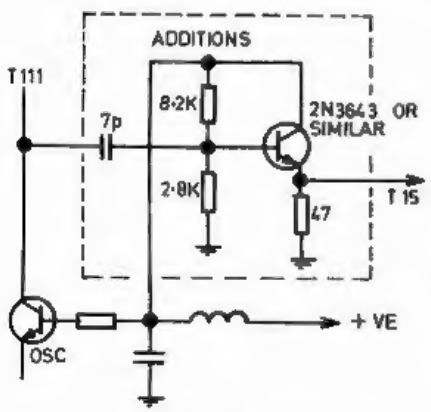


FIGURE - 2

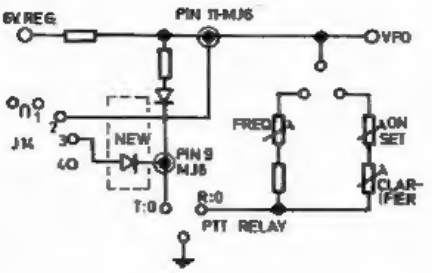


FIGURE - 3

coax grey lead to pin 15 of the RF Board socket.

Remove this lead from the coil and socket as injection will now be supplied by the wire shown going from the emitter of the added transistor to terminal connector 15 on the PCB.

Check over the additions carefully, then after replacing the PCB into its socket, set the setting of the clarifier presets by having a signal source such as GDO or signal generator tuned to say 7.1 MHz and another Rx with BFO off, tuned to the same frequency. With the clarifier turned off, set the trimpot "Freq." on the regulator board so that with the FT101 in SSB position (USB or LSB) it receives the external signal zero beat and with Tx on it is zero beat with the signal source in the other receiver. Check this on other bands to show the improvement and now settle down to enjoy being "on frequency".

FIGURE - 4

MODIFICATIONS FOR FSK FOR FT101:
It is only a small job to include FSK capability in the FT101. The external VFO socket J13 has pins 2 and 3 vacant and can be used for the external circuit so no holes have to be drilled. Use is made of the clarifier circuitry as shown in Fig. 3.

Couple pin 2 of the external VFO socket J14 to pin 11 of MJ6 and fit a small silicon diode such as OA200 with cathode to pin 9 of MJ6 and anode to pin 3 of J14. As in Fig. 4 a ten thousand ohm variable resistor in series with the FSK contacts will provide adjustable frequency shift. Arrange FSK contacts to be open for MARK condition.

For RTTY operation place the FT101 in tune position and tune up for 100Ma IC meter reading, then using a separate receiver to monitor the frequency of operation, operate the FSK contacts and set the 10K variable resistor to give the required shift, i.e. 170 Hz. The clarifier will require offsetting to '—' side to transceive with another RTTY station, but will operate normally on SSB operation.

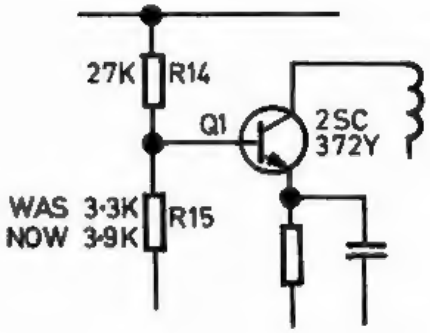


FIGURE - 5

AUDIO DISTORTION:
Distortion on strong signals, has been a problem, when signals over S9 have been accompanied by severe audio distortion.

An exercise with a multi-meter showed that Q1 on the IF PCB was being biased close to cut off causing severe clipping of the signal. Replacing the lower base bias resistor R15 of 3.3K with one of 3.9K cured the trouble (see Fig. 5).

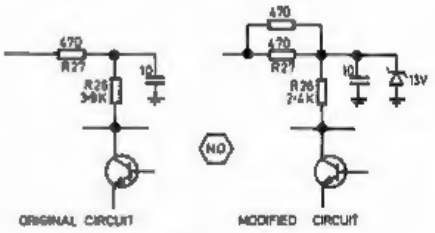


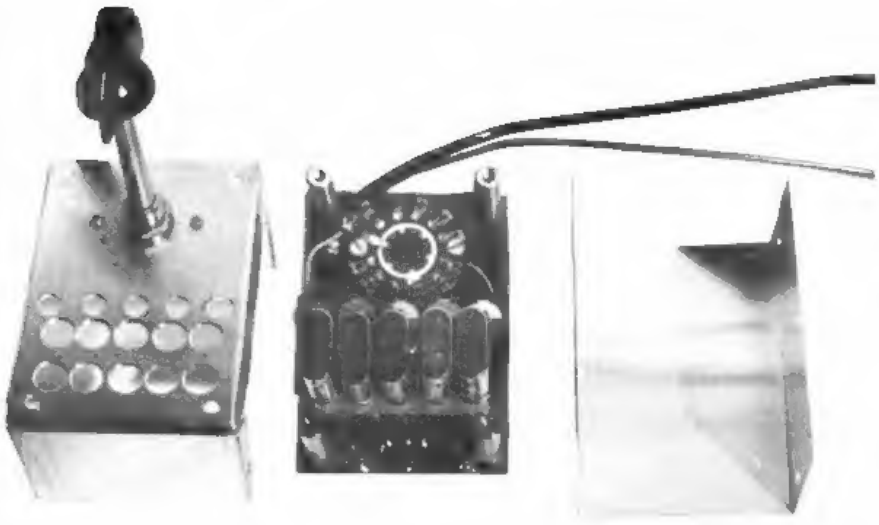
FIGURE - 6

AGC:
A further improvement was to stabilise the supply rail for the AGC circuit. This stabilises gain of the receiver with changing supply voltage, particularly while mobileering. The particular components are on the IF board PB 1080. R27 has a 470 ohm resistor paralleled with it, R26 is changed to 2.4K and a 13 volt, 400 m/w zener diode is fitted from the junction of R26 and R27 to ground. This stabilises this point at about 12.8 volts and the AGC rail now has 9 volts on it with no signal. This gives the receiver far greater AGC range to handle strong signals, without overload (see Fig. 6). ■

Remote Crystal Switching

Design:
M. T. MURPHY VK6ZCX
Construction:
DON S. REIMANN VK6DY

If you need to switch crystals at a distance and have experienced the problems of diode switching then you may like to adapt this circuit to suit your requirements. It uses CMOS (field effect) gates. It is largely immune to reasonable levels of RF or hum on the switching leads and there is no need to use individually shielded coaxial cables for these. See Fig 1.



COMBINING OUTPUTS

There are several ways of doing this:—

1. Take a capacitor from each output to a common output. (Not tried here, due to possible crystal interaction.)
2. Use a NAND gate with an appropriate number of inputs as a buffer. Suitable NAND gates are:—

1. 74C00 2 inputs (4 gates per package)
2. 74C20 4 inputs (2 gates per package)
3. 74C30 8 inputs (1 gate per package)

Any inputs not used should be returned directly to the HT supply (i.e. positive). This only works because oscillators which are not switched on are arranged to produce an output equal to the positive supply voltage (i.e. a "HIGH" output). The output of the NAND gate buffer is "LOW" (—earthed) when *all* inputs are HIGH. If all but one are HIGH and the other (from our oscillator) is going HIGH, LOW, HIGH, then the output will go LOW, HIGH, LOW, exactly out of step with the oscillator.

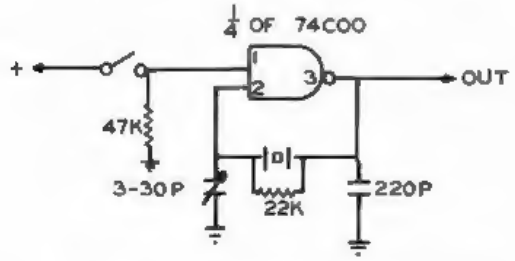
3. Outputs from buffers may be combined by judicious use of diodes, for example see Fig 2.

If G2 has a "low" output and G1 is "HIGH" D2 will be reverse biased while D1 is forward biased.

Hence G1 does not pour current into the output of G2, as it would if the diodes were left out. (This effect could be mutually destructive.)

A version of this has been built and tested on air by VK6DY Don Reimann.

FIG 1 BASIC CIRCUIT (ACTUALLY A PIERCE OSCILLATOR)



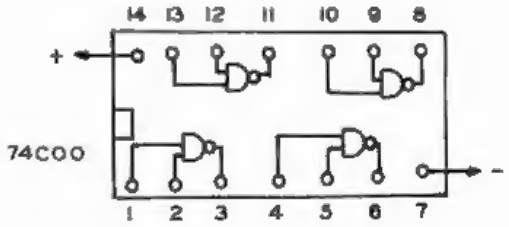


FIG 2

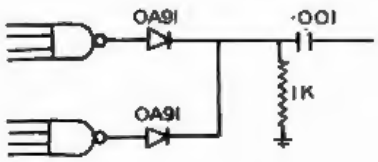


FIG 3

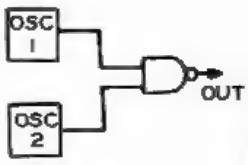
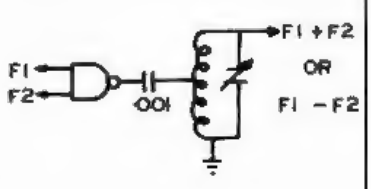
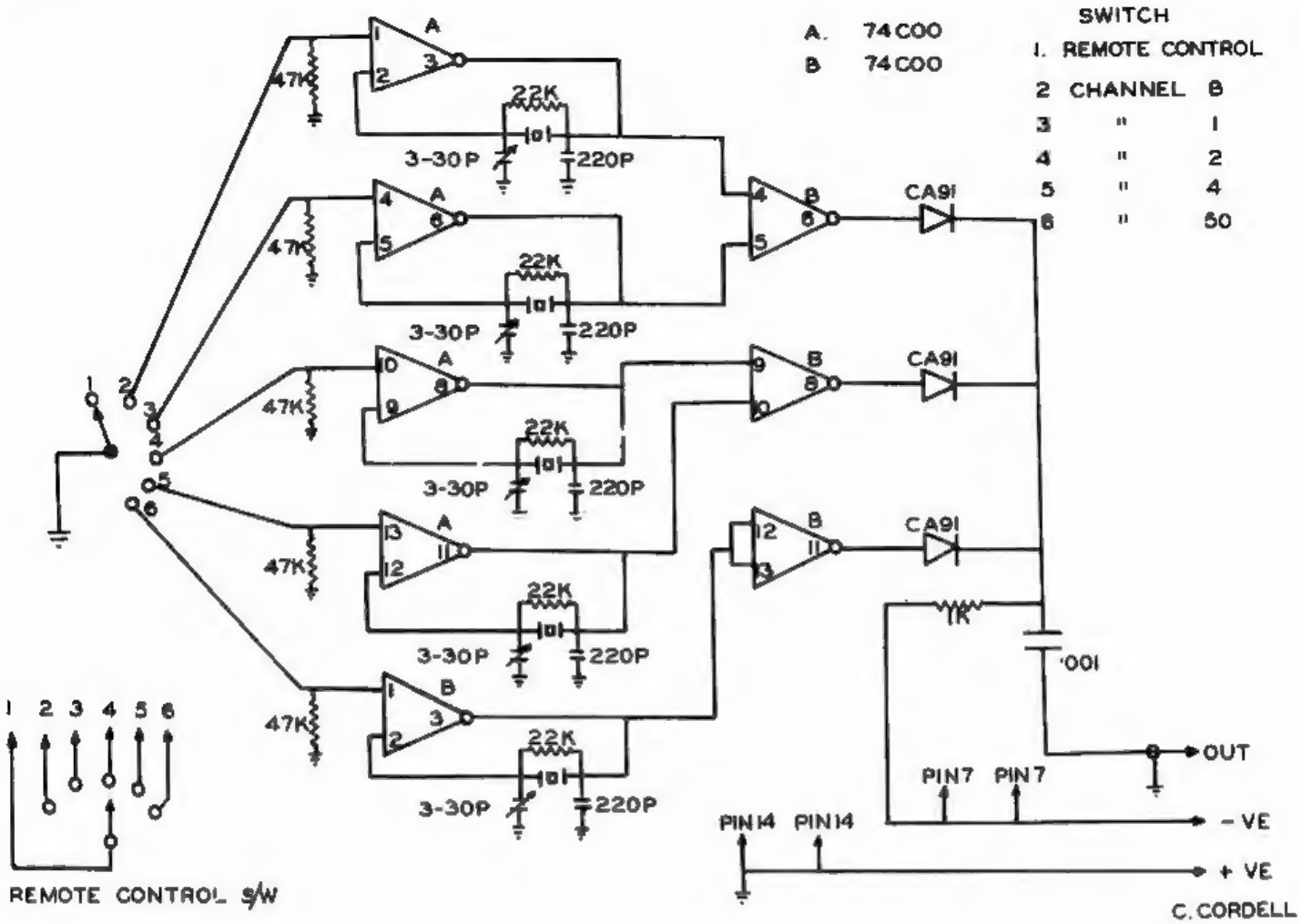


FIG 4



C. CORDELL

FIG 5



This uses 2 × 74C00s. Five gates (of the 8) are used as oscillators. The other three are used as buffers. The outputs are combined using diodes as above (see Fig 5).

This is a very economical circuit (74C00s cost $1.20 each) and performance is excellent.

Output into 470 ohm load is about half the supply voltage, peak to peak. Max. supply voltage is 16 volts. Minimum is about 4 volts.

Although OUTPUTS must not be directly connected together, they *can* be connected to other inputs without any need for capacitors. See Fig 3.

Incidentally, if both oscillators are activated, the buffer becomes a very good mixer, which can then be run into a tuned circuit to pick off the required product. See Fig 4.

AM modulation on F1 or F2 will suffer severe distortion and both must be LARGE signals so this circuit is no good for receiver front ends, only for transmitters. FM on either signal should be OK.

These buffers are digital gates and produce harmonics fairly readily. Hence, DO NOT hang an antenna directly on an output without a tuned circuit.

The possibility of using them as frequency multipliers has not been tried yet, but may be soon (should work to 30 MHz or so).

SUGGESTED LAYOUTS

1 crystal — 2 gates of 74C00
2 crystals — 3 gates of 74C00
3 crystals — 3 gates of 74C00 (3 inputs of a 74C20)
4 crystals — 4 gates of 74C00 (4 inputs of a 74C20)
5 crystals — 5 gates of *Two* 74C00s plus 3 buffers and 3 diodes (see text)
6, 7, 8 crystals — 6, 7, 8 gates of *Two* 74C00s + One 74C30

(Spare gates ignored, spare inputs to positive supply rail.)

CONSTRUCTION

As the transmitters and power supplies for 2 and 6 metres will be housed remote from the operating position, it was necessary to fit both 6 and 2 metre oscillators with a switch for tune-up procedure.

The oscillators are built on a printed circuit board, with the crystals and trimmers on a separate strip mounted ⅝ in. from the main board, and the whole assembly fits into a mini box 3½ in. x 2½ in. x 1½ in.

The abutment plate of the switch fits onto the main case, and the switch wafer is mounted on the PC board. This method allows the whole oscillator assembly to be constructed and wired as a unit, and is then slipped into the case, and secured by four screws.

The oscillator unit is then mounted on the main chassis approximately 1 in. behind the front panel, which has a rectangular cutout covered by a small plate to allow adjustment of the trimmers and removal of crystals, with the selector shaft below.

No trouble should be experienced in duplicating this design if required, or any other lay-out may be used. The switch has six positions. The first is remote and when in this position the oscillators can be controlled from the remote position. Switching to the other five positions brings each separate channel into operation at the transmitter for adjustment purposes, irrespective of the position of the remote switch.

The first unit has been operating for several weeks on 2 metres, and has been completely reliable and can be recommended. ■

Yaesu De-luxe Receiver FR-101D

SOLID STATE RECEIVER with Total Spectrum Coverage 160-2m plus provision for major short wave broadcast bands

Advanced communications technology now brings you a total coverage, solid-state communications receiver. The FR-101D has the flexibility that even the most demanding amateur desires — with provision for all mode reception on twenty-one 500 kHz amateur and shortwave bands from 160-2m. This versatile receiver is capable of transceive VFO control with the matching FL-101 transmitter or FT-101B transceiver. New, solid-state technology, with features such as a double-balanced mixer, offer unparalleled performance and rejection of cross-modulation and intermodulation interference. Build your total performance base station with the addition of the FR-101D communications receiver.

FEATURES

- ☐ Total coverage capability: 160-2m plus major short wave broadcast bands
- ☐ Provision for all mode reception: SSB, CW, AM, RTTY, and FM
- ☐ Complete transceive capability with all 101 series equipment
- ☐ Reliable, plug-in circuit boards for service simplicity
- ☐ Selectable fast or slow AGC
- ☐ Built-in, threshold adjustable, noise blanker
- ☐ Better than 1 kHz readout on all bands
- ☐ Fixed channel, crystal control operation
- ☐ ±5 kHz clarifier
- ☐ Built-in calibrator 25 or 100 kHz (selectable)
- ☐ Indicator lights for internal VFO and clarifier operation
- ☐ Built-in AC power supply and 12V DC operation.

TECHNICAL DATA

Frequency Range: 160m 1.8-2.0 MHz, 80m 3.5-4.0 MHz, 60m 4.5-5.0 MHz, 40m 7.0-7.5 MHz, 31m 9.5-10.0 MHz, 25m 11.5-12.0 MHz, 20m 14.0-14.5 MHz, 19m 15.0-15.5 MHz, 16m 17.5-18.0 MHz, 15m 21.0-21.5 MHz, 13m 21.5-22.0 MHz, 11m 25.5-26 MHz, CB 27.0-27.5 MHz, 10A 28.0-28.5 MHz, 10B 28.5-29.0 MHz, 10C 29.0-29.5 MHz, 10D 29.5-30.0 MHz, VHF6m 50.0-52.0 MHz and 52.0-54.0 MHz, VHF2m 144-146 MHz and 146-148 MHz and additional four bands of 500 kHz segment within 4.0-4.5 MHz, 5.0-5.2 MHz, 7.5-9.0 MHz and 22.0-27.0 MHz (optional extra).

Mode: Selectable USB, LSB, CW, AM, FM or RTTY.

Frequency Stability: Within 100 Hz during any 30 minute period after warm-up. Not more than 100 Hz with 10% line coltage variation.

Calibration Accuracy: 1 kHz maximum after 100 kHz calibration.

Backlash: Not more than 50 Hz.

Antenna Impedance: 50 ohm unbalanced nominal.

Circuitry: 20 Transistors, 12 FET, 4 Integrated Circuits and 33 Diodes.

Power Requirement: 100/110/117/200/220/234V AC, 50/60 Hz, or 13.5V DC nominal.

Sensitivity: 0.3 uV for 10 dB Noise plus Signal to Noise Ratio on 14 MHz for SSB and CW. 1 uV for AM on 14 MHz. 12 dB SINAD for FM reception.

Selectivity: 2.4 kHz nominal bandwidth at 6 dB down, 4.0 kHz at 60 dB down on SSB, CW and RTTY. 600 Hz nominal bandwidth at 6 dB down, 1.5 kHz at 60 dB down with CW filter. 6.0 kHz nominal bandwidth at 6 dB down, 12 kHz at 60 dB down with AM filter. 20 kHz nominal bandwidth at 6 dB down, 45 kHz at 60 dB down with FM filter.

Harmonic and Other Spurious Response: Image Rejection better than 60 dB. Internal Spurious Signal below 1 uV equivalent to antenna input.

Automatic Gain Control: AGC threshold nominal 1 uV. Selectable AGC time constant, fast or slow. Fast attack time 3 milli-second and slow attack time 4 milli-second. Fast release time 0.5 second and slow release time 2 seconds.

Audio Noise Level: Not less than 40 dB below 1 watt.

Audio Output: 2 Watts at 4 ohm impedance.

Audio Distortion: Less than 10% at 2 Watts output.

Size: 340(W) x 153(H) x 285 (D) mm.

Weight: 9 kg.

Price: FR-101D $675. FR-101D/Digital (as above but with Digital readout) $790.

All prices include sales tax. Freight extra. Prices and Specifications subject to change.

AUSTRALIAN AGENT:

Power Transformers — The Beginnings

E. L. Bradshaw

Power transformers are an essential feature of our every day life, and range in capacity from a few volt amps to hundreds of M.V.A.

One of the major factors limiting transformer capacity is the difficulty or inability to transport units beyond a certain physical size and weight. In any case most of us spare very little thought for this rather uninteresting device until it comes to finding the necessary dB for the purchase of a new one, or cursing the junk box for containing an assortment of everything excepting a tranny of suitable current and voltage rating.

The history of the transformer follows a fairly logical development with the major breakthrough occurring in 1884.

The beginning must date from the independent discovery of the principle of electro magnetic induction, by Michael Faraday on August 29th, 1831, and by Joseph Henry. The early devices were primitive in nature, and relied on the interruption of DC, AC not being available at the time. The principle of mutual induction, using electrically separated primary and secondary windings was discovered by an English priest, N. J. Callan, in 1837. Relatively little further development took place until after the invention of the dynamo electric principle.

The first AC device was produced by Sir W. Grove in 1868, and the arrangement consisted of two separated coils wound on an open iron core. One of these windings was AC excited. Further development continued along these lines, but the devices produced were all open core and multiple units were all connected in series. Voltage was controlled by adjusting the position of the iron core within the coils.

These so-called secondary generators were displayed at an exhibition in Turin, Italy, in 1884. This exhibition was visited by three engineers, Max Déri, Otto Bláthy and Karl Zipernowsky, from the electrical section of the Ganz factory in Budapest. Fortunately, they recognized the additional advantages in using a closed core construction, and operating individual transformers in parallel instead of in series. On their return to Hungary, work commenced on the first transformer, a name coined by the three aforementioned gentlemen. Pages of their laboratory record show that the first written notes of their experiments were recorded on August 7th, 1884. Transformer No. 1, a single phase, shell type unit, rated at 1400W, 40 Hz, 120/70V was despatched from the company on September 16th, 1884.

An opportunity for public display came the following year when 75 transformers were produced to supply power for 1067 incandescent lamps, at the Hungarian National Exhibition. These transformers operated from a single phase alternator, supplying 1350V at 70 Hz. The generator was started and the lights energised on May 1st, 1885, and operation continued until the close of the exhibition in November of the same year

May 1st, 1885 must undoubtedly rate as one of the most important in the history of alternating current electrical engineering. The exhibition was patronised by many foreign visitors, amongst them George Westinghouse, an early advocate and pioneer of AC in the USA. Many foreign orders were received as a result of this display, and the transformer was launched into the everyday position which it has at the present time.

Finally, it is interesting to note that the transformer as a closed core device, and its position in an AC distribution system was realised by an American, J. B. Fuller, and confided to an associate just prior to his death. His notes found in early 1879 were not appreciated or understood at the time, and so the world had to wait a few more years for Messrs. Déri, Bláthy, and Zipernowsky to find the missing links. ■

Perth 2 Metre Repeater

Will McGhie
21 Waterloo Cres., Lesmurdie, WA 6076

Perhaps the biggest change to Amateur Radio since the widespread use of SSB has been the extensive use of the talk-through repeaters. Satellite and earthbound repeaters constitute a very large, and steadily growing, part of Amateur Radio today, and the future looks exciting.

VK6 was the last state (excluding VK8) to build and operate a 2 metre repeater. This situation was due in part to the small active amateur population and poor communication with those in the east who had already constructed repeaters. To many of us, the problems of getting a repeater on the air seemed formidable. Little was written on the subject and what was written tended to indicate one needed a good clean transmitter, spurious free receiver, considerable screening between the transmitter and receiver, great aerial separation, aerial phasing, cavity filters and, finally, a lot of luck. So for several years most of us talked about building a repeater, but little was done. The biggest motivating force was missing in that few amateurs in VK6 had operated through a repeater, and until you have, the full impact of repeater operation does not become obvious.

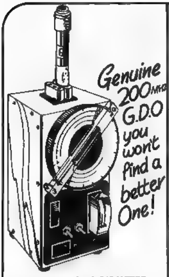
However, prior to 1972 not all amateurs who were interested in 2 metre repeaters were only talking. Graham VK6BY and Mac VK6MM were constructing and testing a repeater, and the project was well advanced when Russ VK6CV returned to VK6 from VK3. After sizing up the situation, Russ and Jerry VK6ZAS obtained a Pye F60 base station and converted it to a 2 metre repeater operating on the original channel 4. The repeater was installed at a commercial group site 1200 feet ASL on the escarpment 15 miles S-SE of Perth, and it worked, with no cavity filter, no special aerial phasing or any of the other supposed requirements. So Perth finally had a 2 metre repeater, and it worked very well, except for one problem.

The problem followed the development of the Perth repeater for a considerable time — channel standardisation. You may or may not remember that around 1972 through 73 was the re-allocation of channels. This meant that for many amateurs the purchase of crystals for a repeater channel that may not exist in the very near future was put off. In fact those that were associated with the repeater advised against the purchase of crystals until repeater channels had been decided on. Hence, for the first few months of operation of the channel 4 repeater, very few amateurs were equipped to use it.

After much thought and frustration to find out what was likely to happen in the Eastern states, Channel 1 was decided on as the new repeater frequency. In December of 1972, the repeater frequency changed to channel 1, but as there had been no decision as to repeater frequencies, many amateurs were reluctant to invest in a set of channel 1 crystals. This problem remained until new repeater channels were worked out and the VK6 repeater changed to the new channel 1 frequency during February of 1974.

However, returning to the end of 1972, the repeater had been running with great success and it was about this time that I became interested in doing something about maintaining the repeater. During this time, drift problems with the mute had been eliminated, a high performance preamp constructed, and control circuitry and ident. facilities added. The control and ident. circuitry was based on the VK5 design and was constructed to meet our local requirements by Graham VK6BY.

As the site was only temporary, much of the early installation was also temporary, but the general coverage from this site was 60 miles up and down the coast, and about 40 miles inland. Best DX worked was about 800 miles to VK5WE-MM up north of Carnarvon. During this time a narrow IF filter (20 kHz) was tried, but was found to be unsatisfactory due to poor



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ONLY $200

Additional crystals available as follows:

Channel	Tx	Rx
40(B)	146.00	146.00
44/56	146.20	146.80
46/58	146.30	146.90

Price $9.00 per pair (per channel)
Limited number of 145.90 Rx crystals available for use with existing Ch 4 repeaters. Only $5.00

The IC22A is Icom's new and improved version of the very popular IC22. The IC22A is ideally suitable for home or mobile use. We are offering this unit with 3 channels, i.e. channel 50 simplex and channels 42/54 and 48/60 repeat.

We have the IC22A INCLUDING 3 CHANNELS of crystals (normal price $217) for only $200.00 (P & P Insured anywhere in Australia $3.00).

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This new microphone features twin inserts which are out of phase to ensure good noise cancelling. Fitted with high quality PTB switch and retractible cord. Frequency response from 300–5kHz 250–600 ohms. Why pay up to $30? The CDM1541 is only

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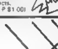
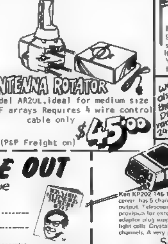
The Europa B is a linear transmit and receive transverter 28–30MHz to 144-146MHz. It is suitable for use with either a transceiver or a separate receiver/transmitter. It is ideal for Oscar operation as well as normal tropo work. Although its primary use is for SSB it will receive and transmit any mode of which the H.F. equipment is capable. SSB, AM, CW, FSK, FM. Once attached to your H.F. equipment, you operate it exactly the same as on the H.F. bands, the Europa B does the rest.

$229.00
ROAD FREIGHT $3.00





ANTENNA ROTATOR

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NEW 2 METRE ANTENNAS

9Y2DXW, 144-148 MHz 9 element Yagi specially designed for Oscar use $79.00 (p & p Road Freight extra). 3Y-21L, 3 element Yagi 144-148 MHz gives 6dB gain – ideal for fox hunts Only $14.00 (p & p $2.00)

'DICK' Power Supply

Input 240V AC 50Hz. Output – 12V DC 3A surge 5A

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Ken KP202 146-148 Hand-held transceiver has 5 channel capacity with 2W output. Telescopic aerial, squelch, provision for external aerial and PL259 adaptor plug supplied. Operates on pen-light cells. Crystals included for channels. A very popular unit

	Tx	Rx
Channel 40	146.00	146.00
Channel 50	146.5	146.5
Channel 42/54	146.1	146.7
Channel 48/60	146.4	147.00

Special KCP 2 NiCad battery set and charger with 10 cells to suit the KP202 available at $35.00.

Special **$134.00** (P&P $2)

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audio quality if stations were off channel or running greater deviation than 10 kHz, so the wide band filter remained (30 kHz).

Due to the foresight and generosity of Mac VK6MM, a new site several hundred yards from the original became available, complete with a 250 ft. tower. Power was also available, but it was necessary to construct an asbestos lined wooden box to house the repeater. The complete relocation of the repeater including coax runs, aerial installation, mast head amplifier, power supply connection and cabinet installation was accomplished in one weekend. Those who took part were 6CV, 6ZFG, 6KB, 6PR, 6ZHR, 6TZ, and 6UU. It was an example of how a relatively difficult project can be accomplished, given the enthusiasm and support of a few.

This basic setup is still in use with surprisingly few problems. The aerials used are commercial folded dipoles suitable for direct coax feed. The coax used is lo-loss foam, but even so has a loss of 6 dB and hence the use of a mast head pre-amp consisting of 2 grounded gate TIS88s. The pre-amp may be switched and out of circuit, thus allowing checks to be made on it and the receive aerial. The transmitter runs 50 watts output with an e.r.p. of 14 watts. No cavities or any special shielding is needed. Aerials are separated vertically by 35 ft. Mute sensitivity is very good, opening on signals that produce insufficient audio to be copied. A mute tail operates for 1-2 seconds on weak signals, but strong signals produce no mute tail. This discrimination between strong and weak signals is accomplished by a second mute circuit set to operate at about 1 uV. This second mute switches the delay into the main mute circuit.

During its two years of operation the repeater has only been off the air for two days due to a 6/40 failure. General stability has been excellent and thoughts of a solid state transmitter have not advanced far due to the high reliability of the repeater. As yet no battery standby has been included into the unit but it is hoped that this will be done. Due to the location on an escarpment, coverage inland is only about 40 miles. It was noticed that shifting from the original site where the aerial height was around 60 ft., to the new site with aerial heights in excess of 200 ft. produced no noticeable increase in signal strength up and down the coast. However much greater signals were noticed along the escarpment and made the great aerial heights worthwhile.

Since this article was commenced a 6 dB gain aerial has been added to the transmitter. One interesting change which appears to have occurred is that increased signals are most noticed at great distances from the repeater. Signals received at a closer range appear to be only slightly better, or no change. The reasons for this could be several — but possibly the radiation angle is more favourable at the horizon than at points closer in.

Looking back on the history of the Perth repeater, one can only say that it has been highly successful, due mainly to the enthusiasm of a few and the luck of picking out a piece of equipment that has performed very well as a repeater. The future capabilities of repeaters seems limitless. Some argue that repeaters make it all too easy and this is obviously true. But for every change in amateur radio, there are always afterthoughts.

Perhaps the excitement of repeater operation can best be summed up by being able to work someone 100 miles away and all that is required is a few hundred milliwatts from a hand-held transceiver. AND A REPEATER ■

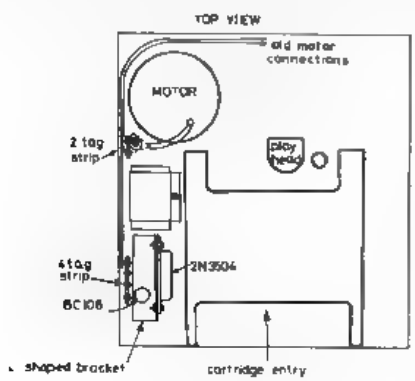
The Pioneer 8 Track Cartridge Player in the Mobile Shack

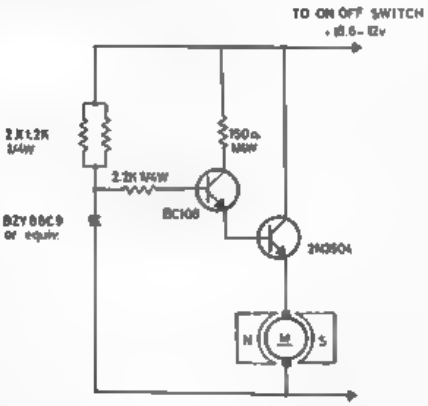
A. M. Austin VK6MA
40 Armstrong Road, Wilson, WA 6107

Not amateur radio but . . . Maybe you have also experienced trouble with erratic tape speed resulting in poor play back. Possibly you too, have broken open cartridges, lubricated spindles, wiped graphite from the pinch roller and cleaned the motor governor contacts without permanent positive results.

Take heart, while all can contribute, the main cause is the governor system. The VDRs across the contacts do reduce sparking but do not prevent it. As a result the carbon build up adds resistance to the motor armature circuit causing erratic running.

Since installing my electronic speed control, some 12 months ago, I now only have to contend with cleaning the cartridge pinch rollers, pressure pads and occasionally free up inside the more troublesome cartridges. The problems are now all external to the player unit.





INSTALLATION:

For the last time remove the motor, take off the outer cover, MHU metal shield and pulley. Remove the circular magnetic assembly and watch out you do not bend or damage those tiny brushes and springs. Using short pieces of 15 amp fuse wire, bridge out both pairs of governor contacts and re-assemble the motor. Fit the motor to the unit. Make an L-shaped aluminium bracket for the 2N3504 and fit the tag strips as indicated. Take care when drilling holes for the transistor bracket and tag strip. The two tag strip earth lug is mounted under the motor holding screw. The BC108 and other components are supported by the four tag strip and 2N3504 connecting leads. Take care there is only just enough room. Do not forget to use a mica washer and insulated mounting kit for the 2N3504.

CIRCUIT OPERATION:

The motor stalled current of 2 amps is well within the IC max. 4 amp rating of the 2N3504 for starting purposes. Once running, the motor current quickly falls to around 0.25 amp. As the motor back EMF rises with speed the 2N3504 and BC108 emitters tend to float up closer to their respective base voltage values. This reduces their respective collector currents thus controlling the motor voltage (and speed) at a value determined by the zener pegged base voltage of the BC108. The motor voltage is 8.1V in my case. At a maximum input voltage of 16.6V the 2N3504 dissipation would be 2.4W and therefore heat sinking requirements are minimal.

FINAL ADJUSTMENT:

If the speed is too slow, insert a normal forward biased diode in series with the zener to raise the BC108 base voltage.

If the speed is too fast strap a 2K preset potentiometer across the zener and connect the 2.2K resistor to the wiper. Using the preset potentiometer adjust the BC108 base voltage to give the desired speed.

In my case the circuit worked exactly as is but with component variations some final fiddling may be necessary. ■

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Japanese baluns, 1 KW PEP 75 Ohms impedance only	$10

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ASAHI model AS-303A set of 5 whips 10 to 80 M. Complete with ball mount and spring	$90
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AS-WW ¾ wave 2 M. mobile whip	$15
AS-GM gutter clip mount with cable & connectors	$10
M-RING body mount and cap for 2 M. whips	$5

COAX CONNECTORS

Amphenol VHF types Standard PL-259, Angle male-female, T-connector, RCA male to Amphenol female adaptor. All models	$1 each

CUSH CRAFT ANTENNAS

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LAC-2 lightning arrestors	$5

CRYSTAL FILTERS

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MIDLAND 5 W AM 15 W PEP SSB 23 channels transceivers PTT mike 12 V $175
SIDEBAND Brand One Watt model NC-310 hand-held transceivers $50
SIDEBAND Brand 5 W AM 15 W PEP SSB 23 channels transceivers, with noise limiter-blanker, PTT mike, 12 V DC $190

144 MHz TWO METER EQUIPMENT

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A Repeater Identifier

H. L. Hepburn VK3AFQ
4 Elizabeth St, East Brighton 3187

During 1974 it became apparent that the P.M.G.'s Department would require automatic identification to be installed on the various repeaters operating in Victoria.
The writer was asked to produce a unit which would generate the appropriate call signs and have outputs which would give a choice of keying method.
Much discussion indicated that the simplest method of identification on VK3RML was narrow (200 Hz or thereabouts) frequency shift keying since it is normally inaudible and does not require the complex (and expensive) external logic necessary if an audible ident is used which takes into account previous transmissions, current transmissions and time. Nevertheless, the unit had to make provision for an auxiliary keyed audio output should local repeater committees opt for an audio ident.
This article describes the keyer produced for VK3RML.

GENERAL DESCRIPTION

The unit is completely self-contained and is built on a 5½ in. x 4 in. single sided PC board which is housed in a 7 in. x 4 in. diecast box to shield it from strong local RF fields. It will accommodate call signs up to 32 characters long — a character in this context being a dot or a dash or a space. The length of the dot is determined by the internal clock and dashes or spaces are each three dots long. Both sending speed and ident cycle time may be pre-set within wide limits. The only input required is 8-12 volts DC — the 5 volts regulated required for the TTL logic used being provided by an inbuilt LM309 K (or 7805) three terminal regulator. Four outputs are available:

(a) A positive going square wave which is normally low (approx 0.4V) which goes high (approx 3.5V) when keyed.
or (b) A negative going square wave which is normally high (approx 3.5V) which goes low (approx. 0.4V) when keyed.
or (c) A keyed sine wave of about 800 Hz having a maximum amplitude of 2 volts peak to peak and whose level can be set with an on board trimpot
and/or
(d) A "Hold" signal which is normally low (0.4V) but which goes high (3.5V) during the keying cycle. This output can be used to control internal logic.

Programming is extremely simple and consists of putting a germanium diode between the "dot" line and the common line when a dot is required, between the "space" line and the common line when a space is wanted and omitting the diode altogether if a dash is called for. A detailed example of programming is given later in the text.

No originality is claimed for the design since, basically, it is that described by Peter Starke K2OAW in the February 1973 issue of "73 Magazine" with modifications to suit the current purpose.

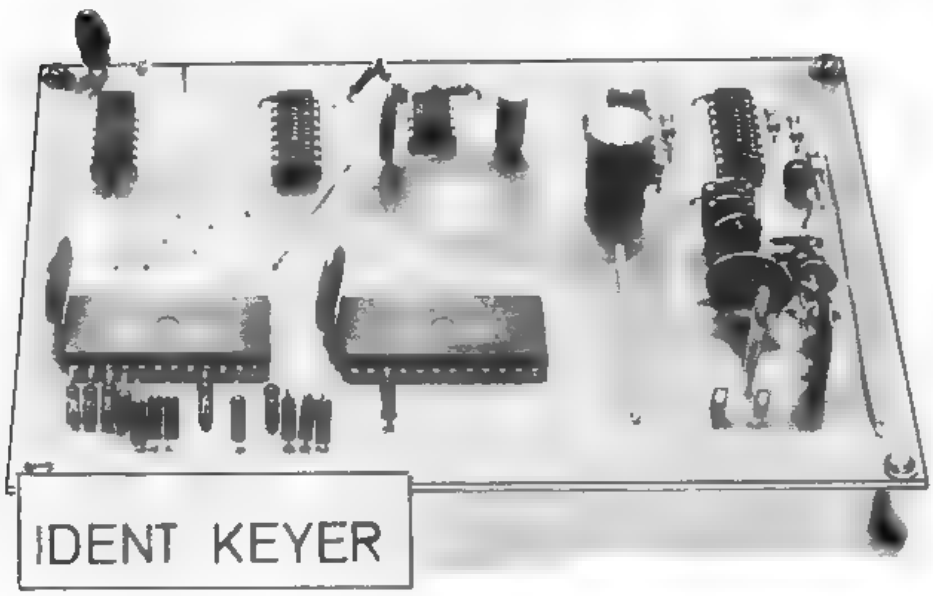
DETAILED DESCRIPTION

Figure 1 gives the full circuit diagram and Figure 2 the layout on the component side of the circuit board.

Other than the voltage regulator four main functions are involved. They are:

1. The cycle timer
2. The clock generator
3. The call sign generator
4. The audio tone generator.

These functions will now be described in detail.



1. The cycle timer:

A NE555 is used to determine how often the call sign is sent. This cycle time is determined by the values of R1, R2 and C1. Fairly obviously the cycle time must not be shorter than the time taken to send the call sign (usually 5-6 seconds at 12 wpm) but any cycle period up to around 5 minutes can be achieved using practical values of R and C. If longer intervals are required it is easier to put a divider (7490, 7493 etc.) between the NE555 output and the controlled device than to scratch around the supply houses looking for very high values of resistance or capacitance. But no matter whether the NE555 is used on its own or in combination with a divider, one point must be considered — the relationship between the "high" and "low" times of the NE555 output.

Normally, with R1 having a low value (say 1/10th that of R2) then the output from pin 3 of the NE555 is close to having equal "high" and "low" times. Since the call sign generator needs only a very short negative going pulse to the clear pin of the 74107 (D) stop/start flip flop to start it, and since a starting pulse having a "low" time greater than the 5-6 seconds needed to send the call sign would cause erratic operation of the call sign generator (fractional call signs for example), then the time output must be such that it is only low for a very short period during each timing cycle. This is achieved by making R1 many times the value of R2. In the unit described the call sign is sent every 20 seconds or thereabouts and the starting pulse is about one second long. Under these conditions R1 is 3.3 megohms, R2 is 470 K and C1 is 4.7 mfd.

2. The clock generator:

The basic string of dots (the clock pulses) for the system is generated by a simple RC oscillator using two gates of a 7400 quad two input NAND array. The other two gates are used elsewhere in the circuit. With the values of 220 ohms and 100 mfd shown the keyed output is around 12 wpm. Some coarse adjustment to keying speed can be obtained by lowering the value of the capacitor to increase speed and vice versa.

Note that the clock generator is always in operation, its output being selected by the subsequent circuitry.

3. The call sign generator:

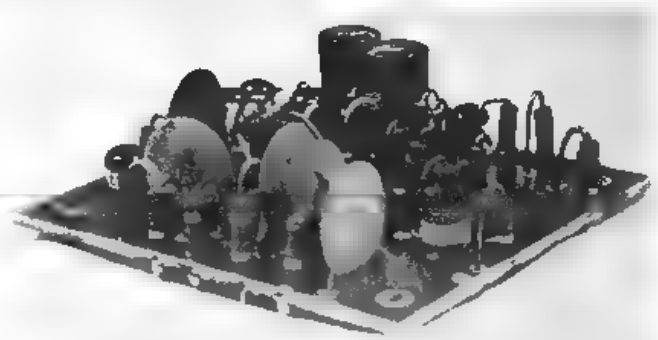
Until started by a negative going pulse to the clear of flip flop 74107 (D) the system is at rest with the $\overline{Q}$ of 74107 (D) and the clear of 74107 (A) low. Pulses from the clock do not cause either 74107 (A) or (B) to toggle. At rest the enable pins of 74154 (B) are high being held this way by the Q and $\overline{Q}$ outputs of 74107 (C).

When the clear of 74107 (D) is taken low its $\overline{Q}$ goes high, thus enabling 74107 (A).

If the "dot" line is low (and this depends on whether the outputs of the

VICOM INTERNATIONAL PTY LIMITED Manager: Peter Williams

WHAT TH S WORLD NEE DS IS A GOOD $25 SCANNER KIT! Here is our new 4-channel scanner board. It is small sized, includes LED indicators which mount in small holes added in your front panel. Two or more boards can be ganged for eight or more channels. Unit can be used with any AM or FM receiver or transceiver with squelch and electronically switched crystals. Oscillator circuits with directly switched crystals can be easily adapted. Price $25 for the kit, including undrilled pcb, all components, instructions, LED indicators. Add 60c for drill bit and $1 P & P



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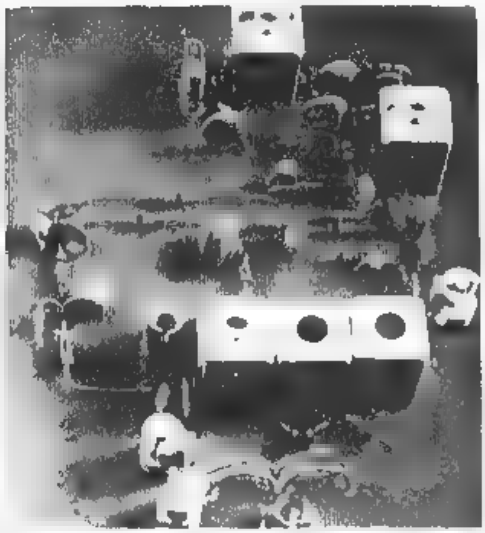

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Vicom have made available a frequency counter in the front window of the Auburn show rooms to assist mobile 2M FM rig owners in staying on frequency. Come anytime and tune your rig while parked at the curb.

PFT-203
SORRY!
Despite many requests from customers we do not wish to supply the Sawa PFT-203 25 watt 2M FM transceiver. We are advised that production of the set has been discontinued and therefore VICOM cannot guarantee a continuing supply of spares and the necessary back-up service. We hope you will understand.
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ANYTHING FROM DC TO DAYLIGHT

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S.A.:	**Graham E. Stallard, 27 White Ave., Lockleys, 5032**	**Ph (08) 437981**

74154s have been so programmed) then 74107 (B) is inoperative but one input of Gate 3 "sees" a single dot. If the clear of 74107 (B) is high (i.e., no dot is programmed) then gate 3 receives a dot and a "double dot" from 74107 (B) and outputs a dash.

Output from gate 3 (one pulse for each dot, dash or blank) is divided by 16 in the 7493 and by two in 74107 (C) to give a total divide ratio of 32. These pulses from gate 3 also go to gate 4 which may or may not output them to the keying terminal depending on the programme.

The outputs from the binary lines of the 7493 (1-16 inclusive) pass to the binary inputs of the two 74154s. Only one 74154 is enabled at a time so that the first sixteen pulses to the 7493 cause 74154 (A) to operate and the second sixteen cause 74154 (B) to operate.

The outputs of the 74154s are normally high but when the sequence starts the first pulse causes pin 1 of 74154 (A) to go low, the second pulse causes pin 2 to go low and so on. The overall effect is that a "low" ripples through from the 1 output of 74154 (A) to the 16 output of 74154 (B) to give a total of 32 low going command pulses.

The 32nd pulse causes 74107 (D) to change state. Its $\bar{Q}$ goes low, the clear of 74107 (A) is pulled low and the sequence stops until the next negative going pulse is forthcoming from the NE555 timer.

If a germanium (not silicon) diode is connected between an output from the 74154s and the space line, then when that particular output goes low it will pull the space line low and disable gate 4 so that no output appears from gate 4. If the diode is put between the 75154 output and the dot line, then when that output goes low the dot line is pulled low blocking off 74107 (B). However, the space line is high and gate 4 is enabled so that one dot reaches the output of gate 4. If no diode is present between the 74154 output and either the dot or space lines then 74107 (B) toggles and its output (a "double dot" in effect) inputs to gate 3. This gate adds the "double dot" from 74103 (B) to a single dot from the clock and outputs a "triple dot" which is either a dash or a space. Gate 4, being enabled because no space is programmed, passes a dash to the keying output. Thus, during the on-time of the call sign generator a total of 32 dots, dashes or spaces appear at the keying output. The sequence is determined by the positioning (or omission) of diodes between the 74154s and the dot or space lines.

4. The audio tone generator:
This is a simple single transistor phase shift oscillator. With the values shown the frequency of oscillation is around 800 Hz. Just how close depends on the actual (not nominal) value of the 0.047 mfd capacitors in the collector/base feedback path. The oscillator is followed by a 2N5245 or MPF102 buffer/source follower to provide a low output impedance.

When the call sign generator is inoperative the output of gate 4 is high, the 2N3565 keying transistor is switched on and its collector is at a low potential. The audio oscillators HT feed, being taken from the 2N3565 collector, is also low and the oscillator does not operate.

When gate 4 operates its output goes low, the 2N3565 switches off and HT is applied to the audio oscillator.

The audio output level can be pre-set by means of the 1.0 K trimpot used as a source resistor for the 2N5245/MPF102.

PROGRAMMING

Up to 32 characters can be accommodated by the keyer, a character being either a dot or dash or a blank space. To program the keyer it is first necessary to set down the call sign and determine the number of characters involved. Using the writer's call sign as an example it is first set down as follows:

Position	Characters	Position	Characters
1	●	17	— A
2	● V	18	Space
3	●	19	●
4	—	20	● F
5	Space	21	—
6	—	22	●
7	● K	23	Space
8	—	24	—
9	Space	25	— Q
[illegible]	●	26	●
[illegible]	● S	27	—
12	●	28	Space
13	—	29	Space
14	—	30	Space
15	Space	31	Space
16	●	32	Space

The complete call sign requires 27 of the 32 available positions leaving 5 unused (or space) positions. It is advisable to have

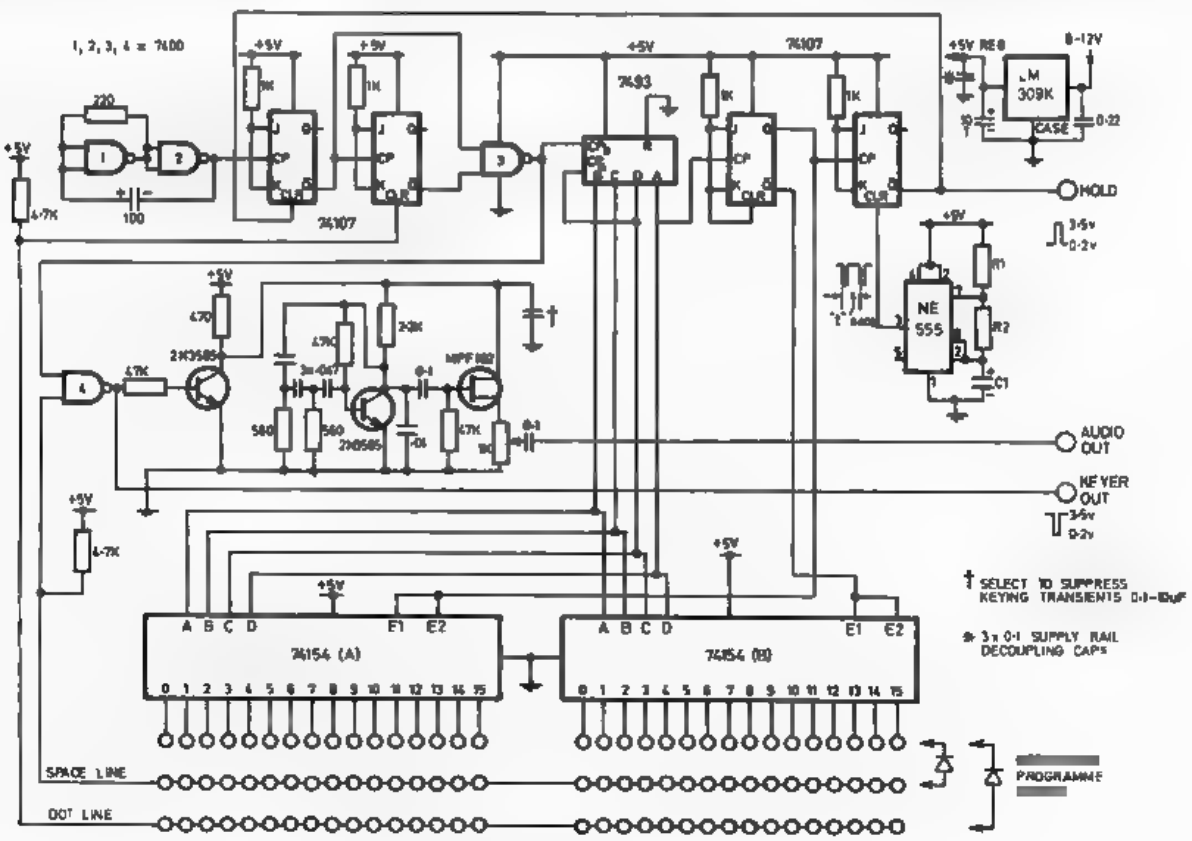


FIGURE 1–REPEATER IDENTIFIER LOGIC DIAGRAM

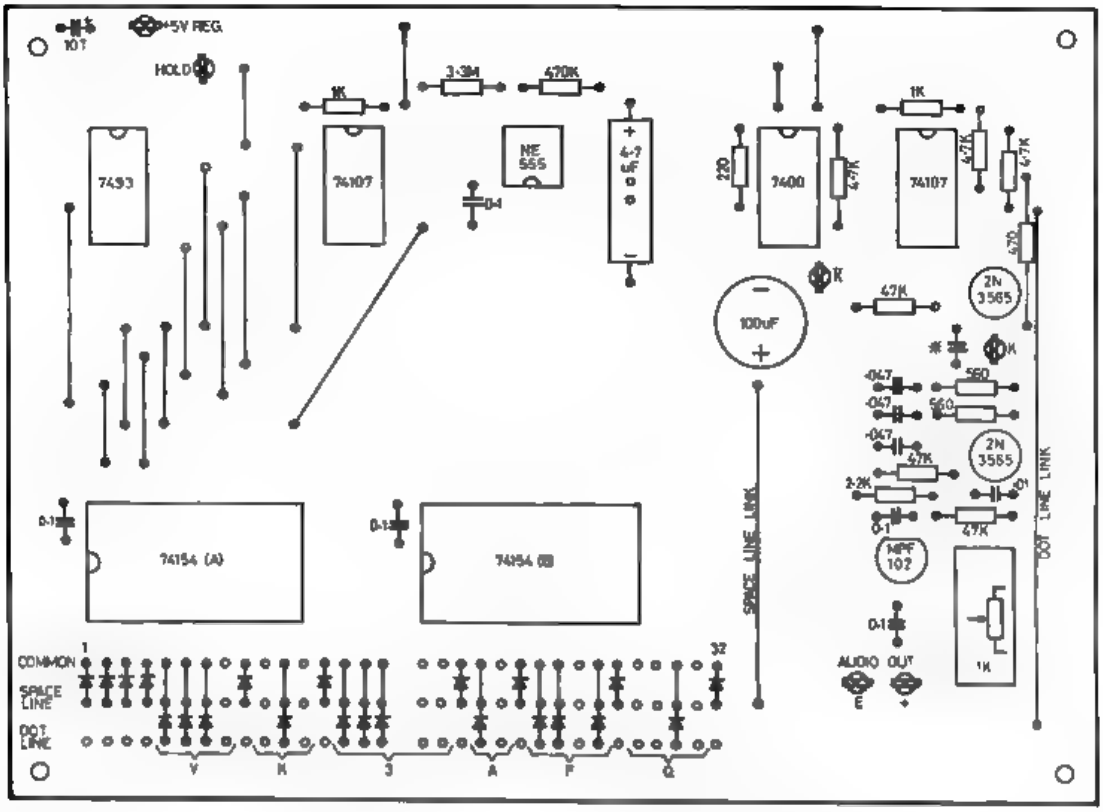


FIGURE 2 – CALLSIGN GENERATOR – LAYOUT OF COMPONENTS

most of the unwanted spaces at the start of the cycle (to allow a transmitter time to come on for example) so that the table is readjusted a bit to give the following:

Position	Character	Position	Character
1	Space	17	—
2	Space	18	—
3	Space	19	Space
4	Space	20	•
5	•	21	—
6	•	22	Space
7	•	23	•
8	—	24	•
9	Space	25	—
10	—	26	•
11	•	27	Space
12	—	28	—
13	Space	29	—
14	•	30	•
15	•	31	—
16	•	32	Space

Note that, if the call sign has 25 characters or less, it is possible to fit in "DE" ahead of it and still have one space at the start and one at the end.

All that is now necessary is to put germanium diodes between the 74154 outputs and the dot line or the space line as dictated by the table. No diode is put where a dash is required.

Figure 2 shows VK3AFQ programmed into the keyer.

USING THE KEYER

The simplest way of using the keyer is to take one of the TTL outputs (the K or the $\overline{K}$) and use it to drive a varactor diode placed across the transmitter crystal. Suitable decoupling and level control must of course be included.

Alternatively, the keyed audio output can be impressed on the transmitter audio line and the level adjusted so that it does not override any speech audio present. The "hold" output can be used to turn on a transmitter for the duration of the call sign if that transmitter is not already switched on by a received signal. In this case (as in the case of audio tone) the cycle time would have to be lengthened to a maximum of 10 minutes since, without further logic, the TX would come on whether or not the repeater was in use.

CONCLUSION

Whilst the keyer described was built primarily to ident VK3RML (Melbourne Channel 1) it is flexible enough to have alternative end uses. A batch of boards has been struck to allow other VK3 local repeater committees to build their own ident unit but supply is not restricted to them. Others interested in building a similar unit are asked to contact the writer (SAE please!). ■

QSP

DX-PEDITION

News of a DX-pedition by the Barbados Radio Club, has been passed on by Ken VK3AH.

Several club members are journeying to Palm Island (13 deg. 32' N, 61 deg. 23' W) in the Windward Islands Group, and will be operating under one of the VP2S call signs. It is hoped that the call VP2SPI will be allotted, but this detail is not yet certain.

The dates are 20, 21, 22 June 1975 and all bands 80-10Mx will be operative.

QSLs should be sent to the Barbados Amateur Radio Society, Bridgetown, Barbados.

PIRATES

The Australian Citizens Radio Movement, according to numerous sources is spearheading moves to legalise CB activities as they say the Government has unfairly banned them from airwaves they are entitled to use under the Geneva Convention. They also claim that Australia was one of the few western countries where mass two-way radio was outlawed. They even persuade some of the newspapers carrying their propaganda matter to use headlines like "The Hams want a say" Adapted from Westlakes RC news, April '75.

JOTA

Yes, Jamboree-on-the-air is over the weekend 18th/19th October 1975. An interesting comment from the 1974 report "A number of other (amateur) stations combined amateur activities with camping and other scouting activities". This opens up quite a vista of possibilities in conjunction with radio scouting, the new "Novice Licensing" and dare one include the WIA YRCS movement. Perhaps even those keen people who organise field-days and Conventions could well combine all these things into special events throughout the year which, with amateur satellites, especially Oscar 8 could open up wonderful fields of vision for the youth (and even oldsters) of today. The marvel of JOTA seems not so much "what has been done" as "what can be done"

RECIPROCAL VISITORS' LICENCE

A note from VK4NB advises that a visiting Japanese amateur JH2TEL applied for and was granted a licence to operate in Australia during his stay. It seems he has VK4AAY for a twelve-month period. VK4NB asks if this is a first.

STAND UP AND BE COUNTED

"As one of the several dozen radio services which compete for allocations in the radio spectrum, it is important that the amateur radio service make such efforts to enhance its visibility to the people who will play an important role in determining its future", IARU News in QST, February 1975. ■

An A R Special - A Review of the Atlas Transceiver

The ATLAS 210/215 transceivers are five band fully solid state single sideband transceivers and as such represent a new approach to both electronic and physical design. They are manufactured in the USA by Atlas Radio Inc. of Oceanside California, and sold in Australia by Vicom International Pty. Limited of 139 Auburn Road, Auburn. The units used in our tests were obtained from Vicom and readers requiring information on delivery and price should contact them.

The Atlas is the smallest and lightest HF transceiver on the market at the present time. It is only slightly larger than many of the current two metre FM transceivers. Dimensions are 24.1 cm wide, 8.9 cm high and 24.1 cm deep. It weighs in at 3 kg or a shade under 7 lbs.

Current drain at 12 volts is 500 milliamps or less in the receive mode and 16 amps peak transmit. Average current drain while transmitting would however be only about 4 to 5 amps. This represents many hours of operating from an average car battery.

TECHNICAL FEATURES

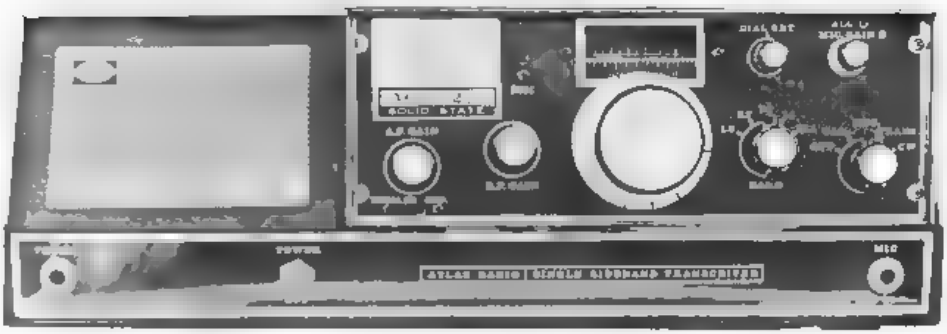
The 210 and the 215 are identical in all respects except for frequency coverage. The 210 tunes 350 kHz of the 80, 40, 20 and 15 metre bands with 700 kHz on the 10 metre band. As imported, the 80 metre band starts from 3.7 MHz, however full details are given in the instruction manual to retune this to 3.5 MHz to suit local conditions.

The 215 differs in that the 160 metre band is included and the 10 metre band omitted. Coverage on 160 is from 1.8 MHz.

Operation of the Atlas is simplified by the use of broadband output transmitter circuits which require no tuning on the part of the operator and so long as a reasonably matched 50 ohm load is presented to the rig, full output will be obtained. Receiver input is treated in a similar manner and no peaking is provided or needed.

All circuits are powered directly from 12 volts DC, so mobile operation requires only connection to the normal 12 volt car battery. No power supplies are required. Transmitter power is a very healthy 200 watts PEP input on the 160 to 15 metre bands with 120 watts on the 10 metre band.

The inbuilt VFO is calibrated in 5 kHz increments on all bands except for 10 metres which is double this figure. A separate calibration scale for the 160 metre band is provided on the 215, whilst the 210 has a separate scale for the 10 metre band. The tuning drive is exceptionally smooth and has a tuning rate of 15 kHz per revolution. The circumference of the knob is divided into fifteen segments giving approximately one kHz calibration. A 100 kHz calibrator is included



as is opposite sideband selection. Provision is made to index the dial setting against the calibrator.

Some very interesting circuitry is employed in the Atlas. In order to overcome front end overload problems common to solid state receivers, no RF or first mixer gain is used. Instead, the input from the antenna goes via individual tuned circuits for each band to the first receiver mixer which is a double balanced diode ring. A low noise high gain IF strip provides all the actual RF gain of the receiver. Single conversion is employed with an IF frequency of 5520 kHz. Selectivity is well taken care of with a special eight pole crystal filter giving a band pass of 2.7 kHz at the 6db points and a total rejection of 130db.

The 'S' meter is calibrated in the usual way to S9 and 50db over S9. In the transmit mode, the meter is switched to read final collector current and is calibrated to 16 amps. Both the meter and tuning dial are indirectly illuminated, with switching to lower the intensity for night time mobile operation.

THE ATLAS ON THE AIR

Unfortunately the time spent testing the Atlas was limited. We were therefore unable to carry out many of the technical tests that make up the usual 'AR' reviews. However the time was quite sufficient to form many definite opinions. As the AR-230 AC power supply console was supplied with the test units we were able to try them out in the comfort of the home shack. As no doubt many amateurs will be purchasing this unit to go with their Atlas transceiver some comments on the AC power supply are also in order.

First impression was the extreme smoothness of the tuning dial. With only 15 kHz per knob rotation, SSB resolution is easy. Because a different VFO range is selected for each band, drift varied slightly from band to band. However the maximum drift from a cold start did not exceed 1.5 kHz most of this occurring during the first five minutes of operation. Although no actual measurements were made, it appeared that the VFO drift was slightly higher during the transmit function than during receive. Receiver AGC action was smooth with only a small amount of harshness occurring on the very strongest signals.

The Atlas specifications claim that the AGC will handle signal levels up to 3 volts. As a test, the normal station transceiver was fired up and the Atlas was used as a monitor for this. Excellent copy was obtained in this extreme situation.

Used with a standard high impedance dynamic microphone, reports on audio quality were excellent however it appeared that it was easy to overdrive the final resulting in a dramatic falling off of intelligibility. While a front panel ALC adjustment is provided, the instruction manual suggests a try and see approach to its setting.

Tuning up for any band seems almost too easy. Select your band, flip the function switch to the CW position, check that the collector current is around 12 to 14 amps, and you are in business. Speak into the microphone and adjust the MIC gain for a peak current reading of 8 amps. It's rather hard to resist the temptation to adjust the final tuning, but the Atlas does not have or need any peaking controls.

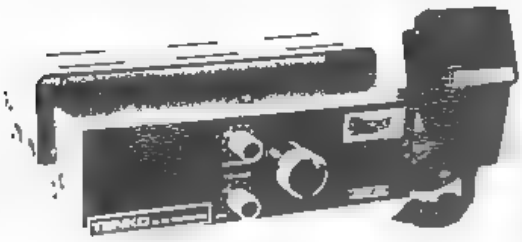
A small loudspeaker is built into the transceiver, but it is on the wrong side for mobile operation in Australia. This also applies to the rear mounted microphone input socket. The Atlas is of course designed to actually plug into its companion mobile mounting bracket. All connections are then made to the bracket allowing easy removal to the home station power supply unit.

With the AC console the Atlas turns into a very elegant home station taking no more space on the operating table then any comparable all band transceiver. Over long periods of transmission the supply remained quite cool. Under very quiet conditions a small amount of both mechanical and via the speaker hum could be heard.

CONCLUSION

There is no doubt the Atlas breaks new ground in HF mobile operation. It would be entirely feasible to fit it into the smallest of cars while the current drain over a period of time would average only two or three amps. No doubt this little rig will catch the imagination of many amateurs ■

TENKO 2XA 2 METRE FM TRANSCEIVER



An excellent compact transceiver, (similar to Swan FM 2XA), 12 channels, 12V DC, with up to 15W output. Receiver uses dual gate MOS FETs in the front end for excellent cross mod. and overload characteristics. Comes complete with microphone, mobile mount, battery cable, UHF antenna plug, instr. book, circuit, socket for ext. speaker or headphone, built in "front sound" speaker, SWR protection of PA.
Four U.S.A. channels. Receive 146.94, 146.94, 146.26, 145.00. Transmit 146.94, 146.34, 146.34, 145.00; and two Aust. chans. installed, (B and one repeater, 1, 2, 3 or 4).
90 day warranty — all for an economical **$169.00**
Extra standard channels (B, 50, 51, 1, 2, 3 and 4) **$8.00**
This is surely the lowest cost power packed mobile, now available. Reliable, powerful, compact, neat!

TECHNICAL DATA:

RECEIVER	
Circuit Type	Double Superheterodyne, 10.7 MHz & 455 kHz
Frequency Coverage	144-148 MHz
Sensitivity	0.5 uV for 20 dB quieting
Selectivity	6 dB down at +or—12.5 kHz 50 dB at +or—25 kHz
Audio Output	1 Watt (Distortion 10%)
Squelch Sensitivity	Less than 0.3 uV

TRANSMITTER	
Type of Wave	Frequency modulation (F3)
Frequency Coverage	144-148 MHz
Antenna Output Power	Up to 15 Watts (at 13.8V)
Modulation Method	Variable reactance phase modulation
Frequency Deviation	+or—7 kHz (Maximum) at 1 kHz
Multiplication Method	x 3 x 2 x 2 = 12 multiple
Output Impedance	50-75 ohms
Spurious Response	—60 dB or better
GENERAL	
Size	200(W) x 80(H) x 190(D) mm
Weight	2.13 kilograms

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Newcomers Notebook

with Rodney Champness VK3UG

44 Rathmullen Rd., Boronia, Vic., 3155

A MEDIUM WAVE LOOP ANTENNA

This month David presents a loop antenna/aerial, which ever term you wish to use, that could be of use to those who have problems with electrical interference or with two stations on adjacent frequencies which mutually interfere with one another.

For frequencies between 500 kHz and 2 MHz, the loop antenna takes a lot of beating. It consists of 7 turns of wire (5 or 6 for higher frequencies) around a wooden framework (x-shape as in the diagram). The ends of the wire connect to a 500pF tuning capacitor. A second wire, wound around the centre turn, connects to a coax cable which goes to the antenna and earth sockets on the receiver, or preferably to balanced input.

The loop forms a tuned circuit in conjunction with the capacitor, with the inductive loop providing a low impedance feed to the receiver. The capacitor has to be tuned for each frequency and the selectivity is excellent. The loop is highly directional and by rotating it, interfering stations can be virtually eliminated. The tuning is very sharp and it is advantageous to fit either a slow motion drive to the capacitor or to wire a small value variable trimmer (10 to 20pF) in parallel with it.

The gain is not as high as that of a long wire antenna, but this is more than outweighed by the much improved signal-to-noise ratio and the directional characteristics. The direction of a station can be determined within a few degrees by nulling it out to take its bearing. The broom-handle can be fitted into a box as shown, with the bottom fitting into a recessed slot to prevent it slipping.

The main frame can be made of ¼ in. (6mm) plywood or softwood. The wires should be wound very tight and should be kept that way (under tension the wire tends to stretch slightly). The softwood blocks merely act as bracers and as supports for the broom-handle.

NOVICE

The long awaited Novice Amateur Operators Certificate has finally come to pass. Within a few months we should hear the first Novice Amateurs on the air, as the initial examination is on the 24th of June this year and the following full Novice exam will be on the 18th of November. The Novice conditions are such that a Limited Amateur can sit for 5 wpm morse and obtain a Novice Licence as well as his Limited Licence. It will mean that many of those who seem to find morse the bugbear may be able to get his standard of morse and at least achieve some of the additional privileges a full status amateur already enjoys. Let us all hope that Novice Amateur Radio is a success and that it enriches the amateur service and that it is here to stay.

The conditions for the granting of the Novice licence are not greatly different to those proposed originally by the PMG but there are a few important differences, and I will endeavour to highlight these. There is to be no age limit on people wishing to apply, and the two year tenure doesn't seem to have been retained. The Novice licence will cost $6 instead of the normal amateur licence of $12, so perhaps the din made about the fee to the PMG did have some measure of success. The bands that will be allocated for Novice use are 3.525 MHz to 3.57 MHz, 21.125 MHz to 21 200 MHz and 26.960 MHz to 27 230 MHz, using crystal controlled transmitters with a power **OUTPUT** of 10 watts for constant carrier modes of transmission, and 30 watts **OUTPUT** for SSB.

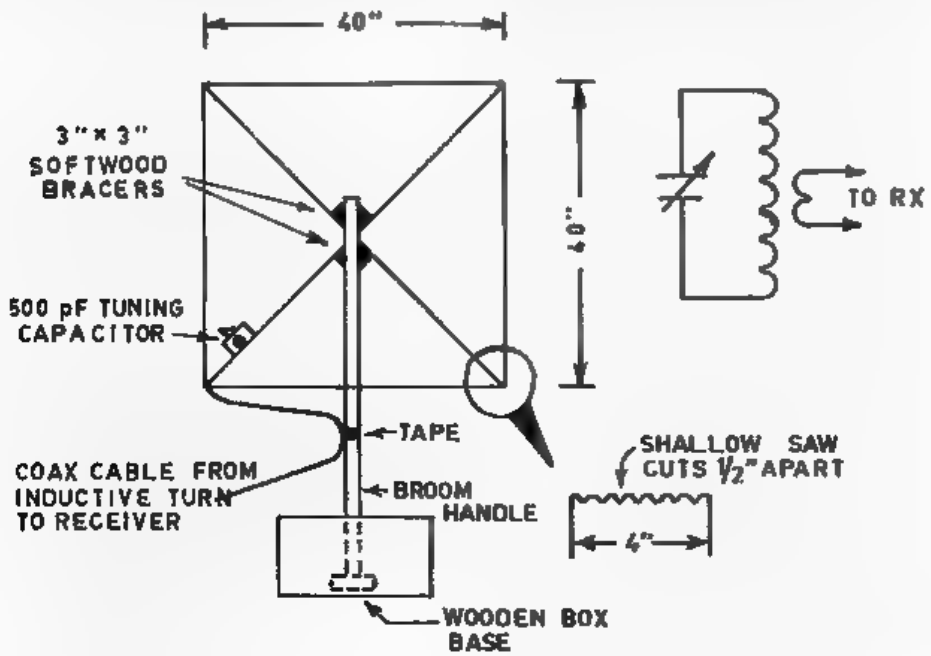
The output power rating for constant carrier type transmissions is most unexpected and means that the maximum power output is about 50 per cent greater than had been expected with the 10 watt **INPUT** licence condition. It will also mean that low efficiency type transmitters can be used where versatility is more important than circuit efficiency, and that many of the Novice transmitter designs will in fact be considerably different to those normally used. It has caused me to do some rethinking regarding the style of equipment that I will describe in AR, although the initial Novice transmitter will remain as it is with a few modifications to up its power on CW only.

The modes permitted for use are A1, A3, A3A, A3H, A3J, A3B and F3 with modulation of ± 3 kHz deviation. No doubt all modes of operation will be used although I expect that A3 (AM), A3A and J (SSB) and A1 (CW) will be the most popular modes, with AM/CW rigs perhaps being the most popular initially.

From what I have been able to gather the examination is likely to be of the multi-choice answer type and it will take less time to do than the traditional essay style examination used for the Limited and Full examinations. The Regulations examination will be identical in style to the existing Regulations exam, and of course the morse is just a half speed version of the 10 wpm morse used by the full privilege amateur now.

The style of morse used for the examination will no doubt be required to conform to the standards as set by the International Telecommunications Union of which Australia is a signatory. The characters will sound horribly slow and drawn out. A person who has just learnt the code out of the book should almost be at 5 wpm and be able to take the examination with very little study time involved. However, it is most important that morse be learnt correctly whether you are going to do 5 wpm or 50 wpm so please make sure your morse is of good standard both receive and transmit, as you will need to up-grade it to at least 10 wpm if you intend to become a full privilege amateur. Probably the best DX mode to use as a Novice is CW, also the cheapest, and is a good training ground in operating procedure, etc.

I have reservations about anyone who becomes a Novice and then proceeds to buy some so called Citizens Band radio and merrily operate on 27 MHz to the exclusion of all other bands. It will be a bit like the amateurs who now operate only their little black boxes on the 2 metre band and then mostly via the repeaters. No, don't get me wrong I am not necessarily "agin" FM, fixed frequency operation, and



repeaters, but like many things too much of a "good thing" is not necessarily good. The people concerned in many cases appear to have Verbal Diarrhoea, and say nothing over a long period. I hope you as a Novice are not foolish enough to fall into this trap, as it is hard to get out of it.

Over the next few months David Down and I hope to present a number of projects and general hints which it is hoped will help Novices and Novices to be. It is hoped that the articles will be of interest to all newcomers, and that you the readers will write to David and me with your suggestions on how this column can help you. Do you think that the name of the column should be changed or is it okay as is? When Novicing is next written about in this column in about two months time the first exam will be over and the general conditions applying to Novicing should be much clearer than they are at the moment. If you have queries on Novicing please write to me and I will endeavour to get the correct answers so that confusion does not reign supreme. Cheerio for now and good luck in the exam. ■

Commercial Kinks

with Ron Fisher VK3OM
3 Fairview Ave., Glen Waverley 3150

MODIFICATIONS TO THE YAESU FT75

The little Yaesu FT75 transceiver seems to have carved itself into a special niche for many amateurs. Being both small enough and light enough to fit into the family car without encroaching too much on passenger space, its success as a mobile rig is easily understood. Bob Martindale VK3BMA has come up with a few ideas that add to the operating convenience of this unit. Originally published in "The Radio Bulletin", journal of the Eastern and Mountain District Radio Club, Bob has kindly passed it on for inclusion in this column.

"Described here are three modifications I have performed on my FT-75. Performance of the unit is unaffected but operating is made more convenient.

1. Relocation of the PA bias adjusting [redacted]

This potentiometer is mounted on the chassis of the transceiver and access is obtained by removing the top cover. The suggested alternative is to drill a hole in the top cover to enable entry of an adjusting tool. I was not too keen to drill a hole in the case, so a position on the rear panel was selected to enable direct access. The pot was mounted just below the VFO socket on the rear.

The hole in the chassis from which the pot is removed is then fitted with a grommet and the wires to the pot are passed through it after being extended.

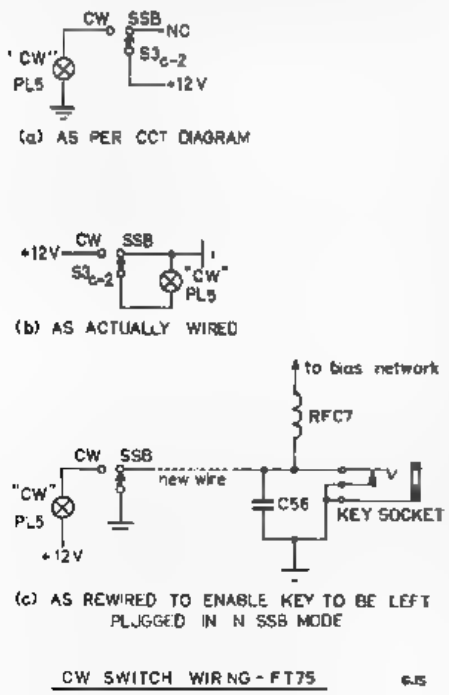
Adjustment of the PA bias is now much more convenient, particularly if the rig is frequently alternated between home and mobile operation with the DC-75 mob. power supply as in my case.

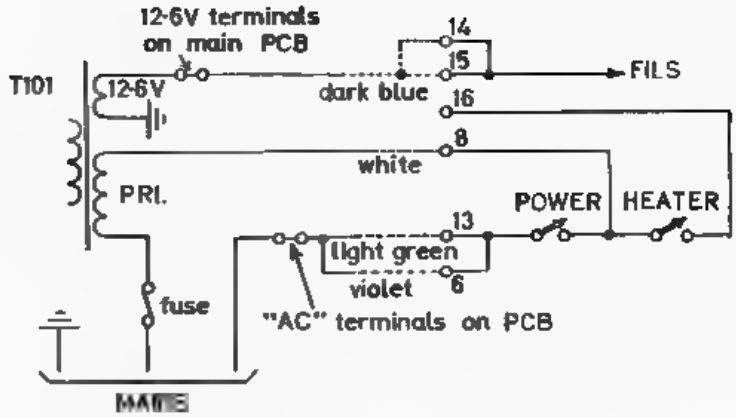
2. Rewiring of the filament supply to the driver and PA tubes

When operating the FT-75 on the FP-75 AC power supply there is no provision for switching off the driver and final filaments during lengthy periods of listening only.

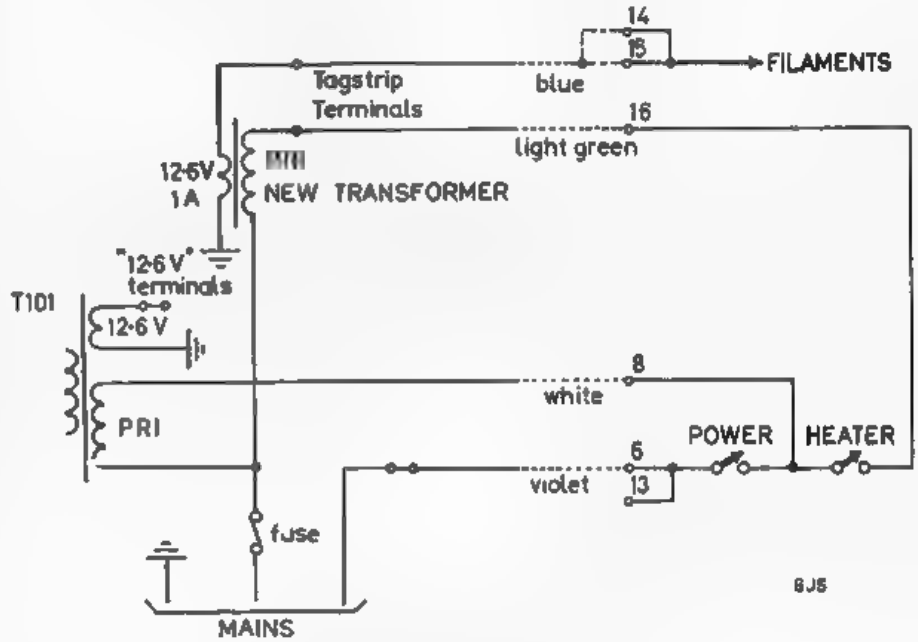
Reference to the circuit diagram produced the following solution. The cable between the FP-75 and the transceiver has two conductors connected in parallel for the switched mains return to the power supply (the light green and violet coloured conductors). If one of these is unsoldered at the connector and inside the FP-75 a spare conductor is now available in the cable.

This spare conductor is used to provide mains voltage from the HEATER switch to the primary of an added filament transformer.





UNMODIFIED FILAMENT WIRING - FT75 / FP75

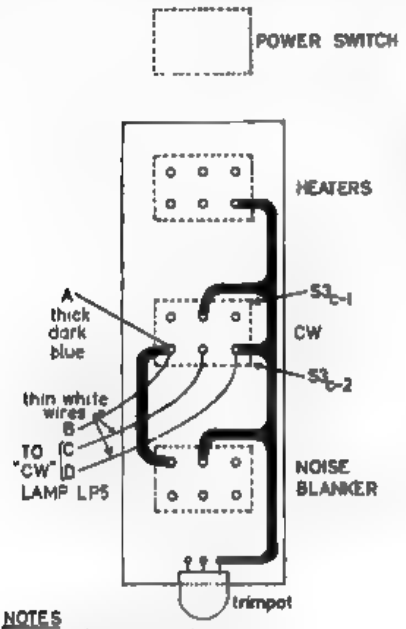


MODIFIED FILAMENT WIRING - FT75/ FP75

The main filament supply conductor is transferred to the secondary of this new transformer.

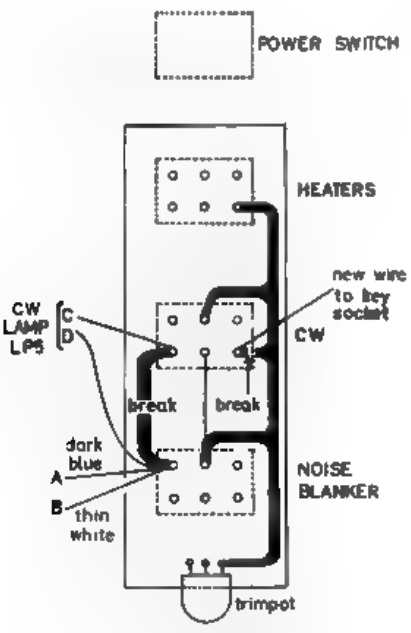
3. Rewiring of the CW switch

Due to the method by which the FT-75 is keyed for CW transmission and the arrangement for plugging in the key, the rig cannot be operated in the SSB mode while the key is left plugged in unless the key is held depressed. I prefer to leave the key permanently plugged in and select the mode of operation with a switch.



NOTES
1. Only relevant details shown.
2. Viewed from underside of transceiver.

UNMODIFIED CW SWITCH WIRING - FT75



MODIFIED CW SWITCH WIRING - FT75

Again reference to the circuit diagram produced a simple solution. S3c-2, the switch section controlling the 'CW' lamp PL5 is rewired according to the circuit diagram. The switch now places a short circuit across the key socket when the CW mode is not selected and the PA bias is now unaffected by plugging in the key."

I am sure that owners of the FT75 will find Bob's ideas worth a try. ■

PROJECT AUSTRALIS

with David Hull, VK3ZDH

The 1975 International AMSAT-Oscar Experimenters Conference was held in the Goddard Space Flight Centre, Greenbelt, Maryland, USA over the period 21st to 24th March, 1975. It was convened to define the next satellite(s) in the OSCAR series and to decide the responsibilities of the national groups involved towards developing these satellites.

Those who attended included Larry Kayser VE3QB and Bob Pepper VE2AO from AMSAT Canada, Karl Meinzer DJ4ZC from AMSAT Deutschland, Chuck Swedblom WA6EXV and Dick Kolbly K6HIJ from the San Bernardino Microwave Society, Jan King W3GEY and Perry Klein K3JTE from AMSAT HQ and Dave Hull VK3ZDH from the WIA Project [redacted].

The principal area of discussion was Oscar 8 and the possible launch vehicle/orbit opportunities for this project. Without going too much into the alternative possibilities, which included a joint VK/VE satellite in an Oscar 6/7 orbit, it can be stated that the conference decided to go ahead on development of an AMSAT phase III advanced spacecraft for launch in mid-1978 and to concentrate all effort to that end.

The development is constrained by the launch date of the last Itos launch on the Delta 2910, a call-up mission with a mid-1978 target. Failing this launch the Titan 3C/377 Military launch could be considered as could the Space Shuttle scheduled for an expected first launch in June 1979. The orbit possibilities of these launches are 900 miles, Sun Synchronous (as per Oscars 6 & 7) for the Delta, Geostationary Synchronous for the Titan, and low altitude low inclination for the Shuttle. None of these orbits was considered entirely satisfactory for the Amateur Satellite service worldwide at our present state of development.

An optimum location for the Geostationary satellite was impossible to find; it would serve only one area for long periods at a time. The 900 mile orbit had been fully explored with Oscars 6 and 7 and there seemed little point to a lower shuttle height orbit. The only alternative seemed to be an initial launch into a 900 mile orbit with a subsequent in-flight manoeuvre to raise the apogee of the satellite to such a height that a considerable radio range would result for much of the orbit.

What the conference had in mind was to provide a viable alternative to the 20 metre band without any of the propagation problems of the HF bands. This in-flight manoeuvre would require the spacecraft to be fitted with an Apogee Kick Motor (an AKM, a small internal rocket motor) and this would be a completely new development for the Oscar Series. This motor would be fired by ground control some orbits after launch at a time determined by the orbit mechanics.

To this end, and to further advance our command techniques, it was decided to fly, also for the first time, an inboard computer. This unit would integrate the Command, Telemetry and general housekeeping of the whole spacecraft. The Computer would interface directly with Ground Station Equipment (GSE) computers in the worldwide chain of command stations. The Spacecraft computer would also arrange the transmission of telemetry in any format (RTTY, CW, BCD et al) as decided by the software fed from the command stations. Commands and operating schedules would also be decided in like manner by ground loaded software.

All this is an interesting technical exercise from the participant point of view, but what about the Oscar users?

The principal transponder would be a linear unit of 150 kHz bandwidth with reception either in the 2m or 70cm band and transmission in the alternative (70cm or 2m band). The exact choice of uplink, 2m or 70cm, and thus downlink, was not decided and the conference chose to refer this choice to a poll of interested parties.

In general, 'E and VK with some of the W's favoured 2m up and 70cm down, the DJ and AMSAT HQ representatives were in favour of the alternative (as in Oscar 7). Project Australis would appreciate feedback from VK satellite users on this question.

Two or three Beacons will be flown. There will be a beacon at each end of the passband and, possibly, a 2304 MHz beacon if the present problem with the FCC on this question can be overcome.

It is anticipated that the AKM will push the satellite into an initial apogee over the North Pole of 7.2 earth radii. From the VK point of view this would provide 2-3 hours access to the whole of North America and Japan etc every 12 hours. In time the apogee would drift southwards with consequent increasing satellite time to a maximum of perhaps 10 out of the 12 hour orbit time. About 1000 watts EIRP would be required for effective communication at apogee.

The responsibilities of the groups involved in building Oscar 8 were laid down as follows:

AMSAT Deutschland:

- **Design major units of spacecraft, i.e., transponder, integrated housekeeping unit including computer.**
- **Build prototype spacecraft.**
- **[redacted]**
- **Build spacecraft both prototype and flight units.**

Project Australis:

- **Design and build GSE equipment with ground computer etc., provide prototype for test use and 5-6 integrated units for world command stations before launch. Provide software for both spacecraft and GSE computers.**

San Bernardino Microwave Society:

- **Design and build 2304 MHz beacon.**

AMSAT HQ:

- **Provide overall system management, procure components, arrange launch, provide operations management once spacecraft is in orbit.**

As will be seen this is an ambitious program and is, of course, subject to future changes and modifications as circumstances may demand. The planned spacecraft is, however, a logical expansion of the AMSAT-Oscar programme and we believe within the capabilities of the international participants given reasonable fortune and support.

On a personal note I would like to thank sincerely Larry Kayser VE3QB, Perry Klein K3JTE, Tom Clark WA3LND and Jan King W3GEY amongst many others who made the author so welcome and provided the hospitality for which the W and VE amateurs are so well known. In addition, I would like to thank the Executive and Divisions of the WIA whose faith in Project Australis and the Oscar programme made my trip possible. I hope the end justifies the means.

NOTES ON WASHINGTON AND OTTAWA

As might be imagined, the author was very interested in amateur radio operation in North Eastern US and Southern Canada during his recent visit. Due to commitments, listening was limited to Oscar passes and FM operation whilst mobile. The amount of traffic through the Oscars, particularly mode B on AO7, was incredible to a listener used to Southern Australian conditions. At one stage 10 call areas were counted in as many minutes, all on SSB. The number of European countries available to a VE3 just serves to highlight the lack of Oscar activity in the South East Asian countries within our range. It also serves to emphasise just how much a high altitude satellite such as Oscar 8 would mean to VHF in VK. Some measure of the impact of AO7 and 6 on Regions 1 and 2 can be gauged by the number of articles on satellite subjects appearing in the amateur press, but the effect on a stranger first-hand is a little overwhelming. They sound like an open 20m in a contest. This activity is also reflected in the number of amateurs joining AMSAT, currently running in the order of 80 per week! VKs are reminded that AMSAT dues will rise from US$5 to US$10 per annum on July 1st so if you have an interest in satellites join NOW. Life membership, a real bar-

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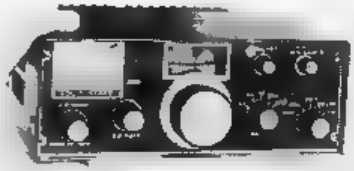
73 Peter Williams VK3IZ



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Passband Ripple	< 1 dB	< 2 dB	< 2 dB	2 dB	< 2 dB	< 1 dB
Insertion Loss	< 3 dB	< 3.5 dB	< 3.5 dB	< 3.5 dB	< 3.5 dB	< 5 dB
Input/Output Termination	Z = 500 Ω, C = 30 pF	500 Ω, 30 pF	500 Ω, 30 pF	500 Ω, 30 pF	1200 Ω, 30 pF	500 Ω, 30 pF
Shape Factor	(6-50 dB) 1.7	(6-60 dB) 1.8 (6-80 dB) 2.2	(6-60 dB) 1.8 (6-80 dB) 2.2	(6-60 dB) 1.8 (6-80 dB) 2.2	(6-60 dB) 1.8 (6-80 dB) 2.2	(6-40 dB) 2.5 (6-60 dB) 4.4
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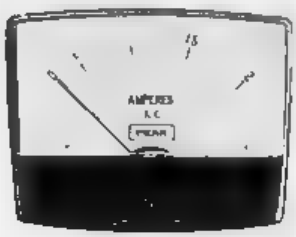

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gain now at US$50 will double also. FM repeaters operation in W and VE was also a little strange to a VK. Most repeaters are privately or club operated, some carry Loud idents some don't, some are on 24 hours a day, some only at night. In the latter category fell the AMSAT repeater in Washington WR3ABU (146.25 to 146.85 MHz). This unit had a loud audio tone ident consisting of the call letters and the words AMSAT REPEATER at 10 wpm. This seemed to go on for ever to the author, but I guess only took 10 seconds or so. Other repeaters are used solely as links to tie two other repeaters together in towns 50 miles or so apart. Remote control of these is common, as in multi-frequency operation with remote telemetry links. All VHF bands from 50 MHz up are used to accomplish this. As can be imagined, there are problems. Particularly in de-sensitisation of a mobile receiver under shadow of a 500 watt repeater on an adjacent channel. One thing I noticed was the remarkable absence of button pushers all the operation I heard was courteous and well managed. Due to the r regulations, call signs are not g ven on every over and as a personal observation it seemed to me that this cut down a lot of unnecessary transmission. Touch tone operation was required for some repeaters. In general, the same power levels were used. IC 22s and similar rigs were common as were hand-held units. All in all most interesting and perhaps a portent of future operation here.

OSCAR PREDICTIONS

OSCAR 6
JUNE

Day	Orbit	Time Z	°W
1	12001	01.19	70
2	12013	00.19	56
3	12026	01.14	69
4	12038	00.14	54
5	12051	01.09	67
6	12063	00.08	52
7	12076	01.03	66
8	12088	00.03	51
9	12101	00.58	65
10	12114	01.53	79
11	12126	00.53	64
12	12139	01.48	77
13	12151	00.48	62
14	12164	01.43	76
15	12176	00.43	61
16	12189	01.38	75
17	12201	00.38	60
18	12214	01.33	74
19	12226	00.33	59
20	12239	01.28	72
21	12251	00.27	57
22	12264	01.22	71
23	12276	00.22	56
24	12289	01.17	70
25	12301	00.17	55
26	12314	01.13	68
27	12326	00.12	53
28	12339	01.07	67
29	12351	00.07	52
30	12364	01.02	66

OSCAR 7
JUNE

Day	Orbit	Time Z	°W
1	2472B	00.04	51
2	2485A	00.59	64
3	2486B	01.53	78
4	2510A	00.52	63
5	2523B	01.46	76
6	2535A	00.46	61
7	2548B	01.40	75
8	2560A	00.39	60
9	2573B	01.34	73
10	2585A	00.33	58
11	2598B	01.27	72
12	2610A	00.27	56
13	2623B	01.21	70
14	2635A	00.20	55
15	2648B	01.15	68
16	2660A	00.14	53
17	2673B	01.08	67
18	2685A	00.08	52
19	2698B	01.02	65
20	2710A	00.01	50
21	2723B	00.55	64
22	2736A	01.50	77
23	2748B	00.49	62
24	2761A	01.43	76
25	2773B	00.43	60
26	2786A	01.37	74
27	2798B	00.37	59
28	2811A	01.31	72
29	2823B	00.30	57
30	2836A	01.25	71

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With Syd Clark, VK3ASC

BREAK-IN Jan/Feb 1975
Transistor Testers; VHF/UHF Rejection Filters Using Coaxial Stubs; Reflections on a Commercial Rig; Some Thoughts on Mobile Noise Suppression.
CQ MAGAZINE Dec & Jan 1974-75
Digital Speed Readout in an Electronic Keyer; Results of the 1974 CQ World Wide WPX SSB Contest, Announcing the QRPp Transmitter Design Contest, Loss in Transmission Line Systems, Antennas. 1S1A Spratly Island Expedition — 1973; Transistor Final Techniques, Antennas
HAM RADIO Dec & Jan 1974-75
Understanding Q, Collins 75A4 PTO Maintenance; Circularly Polarised Satellite Antenna, FM Touch-Tone Decoder, IC VTVM Conversion, VHFer's View of Solar Cycle; Improving Vertical Antennas, RTTY Message Generator; Low-Cost Printed Circuit Boards, Az-e Antenna Control System for Satellite Communications, Audio Oscillator; Regulated, Variable High Voltage Power Supply; Electronic Keyer Paddle; Wind Driven Power Generators.
QST Feb 1975
The Contester; A State of the Art QRP Transceiver for 50 MHz; Precision Tuning, WWII Vintage, Frequency Counter, a Modular Approach, Practical Ideas for the ITV Enthusiast, Transmitting Variables - Who Needs 'Em; A Stacked Multiband Vertical for 80-10 Metres, Simple 160 Metre Converter
RADIO ZS Dec '74, Jan '75
Ham-M Operation for the Blind; RTTY; Intruder Watch, The IARU Monitoring System; Keeping Track of Oscar 7; A Coaxial Phase Detector, PEP Definition and Methods of Measurement.

Letters to the Editor

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

The Editor,
Dear Sir,

On the Queen's Birthday weekend, the NSW Div. VHF & TV Group, is conducting a Field Day contest. The period is from 1200 hours EAST, 14th June to 1400 hours EAST, 16th June 1975. There are 3 sections, Field, Mobile and Home stations, with the best 6 hour and overall score in each section. The points score table is basically as the Ross Hull, on page 13 of the October 1974 issue of AR, with a loading for lunable operation.

Full details can be obtained from the Group's address: 14 Atchison St., Crows Nest 2065.

A. D. Tilley VK2ZYT, Secretary.

The Editor,
Dear Sir,
THE FRIENDLY CONTEST

Amateurs must have been pleased to note that 822 amateur operators forwarded logs in our last Remembrance Day contest. I could suggest that we reached that figure "without even trying"?

All would certainly feel proud if we toppled 1000 by just trying a little.

Book someone, who missed last year, in for this year's contest and for sure we'll top 1000.

Quantity should not reduce quality . . . the exchange of Christian names, for those who have time, and the big scorers do not have time if they are to score well, seems to be catching on and really makes the contest "Friendly".

Help a lot of chaps enjoy the 1975 Remembrance Day Contest.

Peter H. Brown VK4PJ.

The Editor,
Dear Sir,

Recently the VK3 State Repeater Committee held a combined repeater meeting on Saturday 15th February at Melbourne. It was stated at the meeting that the Post Office has as last released the call sign block VK3RAA to VK3RZZ for repeaters. This means that the Victorian application to have repeater call signs in accordance to their place if required will at last come into being.

VK3RML	Melbourne
VK3RGL	Geelong
VK3RWZ	Western Zone
VK3RLV	Latrobe Valley
VK3RMM	Mt. Macedon
VK3RAM	Midland Zone
VK3RSH	Swan Hill
VK3RBA	Ballarat
VK3REG	East Gippsland
VK3RAP	Mt. Arapiles

The meeting decided that all future repeater installations around the State can only be satisfactorily achieved by the use of seven repeater channels in accordance with the 1973 WIA repeater band plan. Many problems of overlap thus will be overcome.

Repeater Standards were fully discussed and unanimously agreed to adopt a universal and uniform set of repeater standards. Deviation plus/minus 7.5 kHz average with 10 kHz peak. Power up to 150 watts DC input if required (local service area repeater will not require this power). Identification it was agreed that FSK be used. Squelch tails it was decided for one second Silent tail to be adopted and applied to all repeaters throughout the State. Two and a half minute timers in accordance with Post Office requirements would be put on, and country repeaters a 5 minute timer would be allowed. A tone on Time Out would also be applied.

Rules for Repeater Operation were also discussed, and were also unanimously agreed to by all repeater project leaders and officers.

1. Repeaters are used for MOBILE working and intended to extend mobile coverage. eg Mobile to Mobile, Mobile to Base. Also used for any Base to Base or Base to Mobile station to establish contact. Where it is possible for any station mobile or base to work on Simplex, then they should do so.

2. If a Breaker breaks in, he should be given the go-ahead immediately this allows for emergency calls, or a quick joining or leaving of the net.

3. Up to two minute transmissions to apply, giving the 2½ minute timer a half minute grace before time out. This is in no way to restrict the length of QSOs, only the length of the transmission, to Time Share for all users.

4. Let the repeater drop out before commencing transmission.

5. Don't Talk 'Waffle' — If you have nothing to say — Don't say it.

For further details or information, please write to the Repeater Committee Secretary, Mr. Ken W. Jewell, VK3ZNJ, 100 McClelland Ave., Lara, Vic. 3212.

W. G. Francis VK3ASV, Publicity Officer, Vic. State Repeater Committee.

The Editor,
Dear Sir,

Since I wrote some time ago suggesting that some VK hams might like to make the effort to speak a little elementary Japanese, I have received quite a few enquiries on the 'phone and on the air.

It would appear that a considerable interest exists and the usual query was "How does one go about it and where do you start?" As all active DXers know, there is never a time of the day or night that you can't hear droves of JAs on at least one of the HF bands, so there is never a shortage of Japanese speaking hams to practice on. Without exception they are extremely co-operative with any foreigner interested enough to try and master a little of their language.

When listening to two JAs rattling off a QSO in their native tongue, it would appear an impossible task to ever get beyond the "sayonara" stage but, by slowing down the tempo, things become a little clearer for all concerned and this is the first essential requirement. Remember it's just as difficult for an average JA to fully understand our rapid mode of everyday speech.

Well now, to get started on a few basic words that are in everyday usage on ham radio and, at the same time, bearing in mind that it is practically impossible to write the correct phonetics of any foreign language in an English form. The obvious answer is to listen intently to the way they pronounce words. What better teacher can you have than a Japanese national brought right into the shack, via the loudspeaker.

Let's start with the usual opening greetings of "good afternoon" and "good evening." These are respectively "kon-nichi wa" and "konban wa" but remembering what I said earlier about concentrating on the way they say it.

I suggest the next simple step would be to make out an "idiot sheet" with the numbers "one to ten" as this fits in admirably in giving a s.g. report and it goes something like this —

1. Ichi	6. Roku
2. Ni	7. Nana
3. San	8. Hachi
4. Yon	9. Ku
5. Go	10. Ju

A report of 4-8 would be forty six in Japanese which is "yon ju roku" from your idiot sheet. Likewise 5-8 would be "go ju hachi". Get the idea?

One other important point when speaking to a JA is to tag "san" on to the end of his handle as a form of politeness, but NEVER on the end of your own name. In the same way he will add san to your name but NEVER to his own name.

Let me finish up by saying I don't possess a PhD in the Japanese language. Far from it. I have only read text books and practised it via ham radio, and I find that making an effort to meet the JAs half way makes the more mundane QSO a little more enjoyable than the usual "Hello Goodbye" type of contact.

I trust the foregoing proves of sufficient interest to those who would like to try out their linguistic

talents and so gain confidence towards an improved vocabulary in the future.

R. B Monfries VK5RB.
975 Main Road Modbury, SA, 5092

EDITOR'S NOTE—For those interested in studying Hiragana and Kata Kana further, the book "How to use Good Japanse" (the Japenese School of the International Students Institute, Tokyo), is recommended. ■

Contests

with Jim Payne, VK3AZT
Federal Contest Manager,
Box 67, East Melbourne, Vic., 3002

JOHN MOYLE MEMORIAL NATIONAL FIELD DAY

One late entry from VK6RI, the 29DX club, with a score of 944 in the 24 hour multi op open. Bad luck seems to have dogged these fellows for the log bears the comment "Hon Sec got horribly lost in trying to find a field day site" However, from the variety of calls listed, it was a good choice.

Lots of comments from all call areas and these will be considered before the rules, etc. for the next contest are published. It is difficult to draft the rules free of anomaly but hopefully we are improving.

VK4AL was at Mt. Nebo National Park about 25 km NW of Brisbane, and 1800 feet above sea level. An FT75 for 7 & 14, FT100B for 3.5 and 21 and a Pye 734 for 146 were powered by a 300 watt generator. An inverted V slung in a tree was used for HF and a 5/8 whip for VHF.

VK1JR was near Tumut with a TS520. There is mention of 4 doz cans — petrol for the 2 kW generator or lubricant for the VF?

VK3YQ was marine portable with an FTDX 100 on Lake Eildon. VK3AOW was in the same area with an FTDX 100 and a 10 watt AM rig for 160. A 133 flat top tuned feeder was used for HF and a dipole for the 160 rig.

VK3TX was using an FT101 with battery pack and generator at Snowy Plains, about 170 km north of Traralgon. Using another rig on 2 metres, Dean's log shows a QSO with VK3LT/P and the RS/T reports are 51009, 529015. A comment on the cover sheet states "The contact with VK3TL/P on 2m is read my transmission by F2 mode".

VK2YB used an ATR2B with a battery powered vibrator providing about 15 watts input, at Springwood.

VK2CAX selected the Jenolan State Forest to erect an 80 metre dipole, 20m groundplane and 52 MHz Yagi. The rigs HW101, MR20B, a home made linear and a 52 MHz transverter were powered from an E2500 generator.

VK3AUQ went to Christmas Hills, about 35 km east of Melbourne with home brew and other gear to work 1.8 through 28, 52, 144, 146, 432, 576 and 1296. The last two were not used.

VK4AAR operated an FT101 from a battery, into a 300 foot long wire for 20 and a folded dipole for 40 and 15 at Moggill, 40 km SW of Brisbane.

VK5AWI was set up 1800 feet ASL on Mt Gawler, 25 km NE of Adelaide. Their 3 kVA generator failed after only half an hour and an 800 watt took over. Alan suggests that a national simulated emergency test similar to those held in the US would provide an opportunity to demonstrate the effectiveness of portable equipment and give valuable experience in message handling.

VK8AS was located 3 miles north of Alice Springs at the old telegraph station with a 6 kVA generator, several rigs SB101, FT200 and TR3. A 400 foot long wire was used for 3.5, 21 and 28.5 bands.

VK5SR used an 18 AVT vertical with 8 radials and an FTDX 560 with a 1500 watt alternator at the Bluff 20 km NW of Mt Gambier.

P29PNG was a special call allotted to P29FV, BG WS MO EM and ZMJ for the duration of the contest. The three operating positions were set up within the Murray Barracks area about 5 km from Port Moresby. Gear included T4XB, R4B, FT101B, FL2100, TS510 and FT200. Antennas were 14AVQ, 18AVT/WB, a dipole and long wires.

VK3ATM went to Blue Mountain about 8 miles south of Trentham. They worked all bands 160 to 2 metres.

1975 CQ WW SSB CONTEST

Although this contest fell on Easter holiday this year there were quite a few VKs and ZLs active. Peter, VK4PJ reported that "conditions were not the best. The long path into the east coast of the Americas must have heard of the Easter break but came back to work on Tuesday.

"Very little from the western side of Europe and the evening long path no help. Even JAs were comparatively scarce except for a few 15 metre breaks. Stateside 15 metre stations below par. At the times I operated there were no 10 metre contacts. Quite a few Russian stations on 20 metres which was easily the best band. I heard quite a few VK4s, including Roy, VK4ZQ, with over a 1000 contacts and VK4UR with a substantial score".

REMEMBER THIS DAY

This year it is on the weekend of August 15/16. At the Federal Convention the ban on the use of repeaters for contest QSOs was reaffirmed. The rules and scoring table will be in next month's AR.

CONTEST CALENDAR

JUNE

7/8	RSGB National Field Day
15	Townsville Pacific Festival Contest
21/22	All Asian Phone
28/29	ARRL Field Day

JULY

12/13	ARRL Open CD CW
19/20	ARRL Open CD Phone
26/28	County Hunters CW

AUGUST

9/10	European DX CW
15/16	R D
23/24	All Asian CW

RSGB NATIONAL FIELD DAY

1700 GMT June 7 to 1700 GMT June 8th.

Stations outside Great Britain not eligible to enter but a certificate will be issued to the VK station whose check log shows most contacts with British portable stations. Send logs to RSGB HF Contests Committee, c/- A. Davis, 41 Gainsborough Road, Crawley, Sussex, RH10-5LD, England. ■

VK-ZL Oceania DX Contest Rules - 1975

The National Amateur Radio Association in Australia invites world wide participation in this year's contest.

Objects: For amateurs of the world to contact VK, ZL, Oceania stations on all bands, 1.8 through to 28 MHz.

Dates: Phone — 1st weekend in October, **CW** — 2nd weekend in October. Starts 1000 GMT Saturday, ends 1000 GMT Sunday.

Type of Competition:

1. (a) Transmitting Phone — Single Operator
   (b) Multi Operator outside of VK/ZL
2. (a) Transmitting CW — Single Operator
   (b) Multi Operator outside of VK/ZL.

Number Exchange: To consist of five or six figures, made up of the RST report, plus three figures which commence at 001 and increase by one for each successive contact.

Scoring —

Oceania Station: 2 points for each QSO on a specific band with VK/ZL, 1 point for each QSO on a specific band with the rest of the world.

World Station: 2 points for each QSO on a specific band with VK/ZL, 1 point for each QSO on a specific band with Oceania other than VK/ZL.

Final Score for Oceania and World Stations is derived by multiplying total QSO points by the sum of VK/ZL call areas worked on all bands. (The same VK/ZL call area worked on different bands counts as a separate multiplier.)

VK/ZL Stations: 5 points for a contact on a band, and in addition for each new country worked on that band, bonus points to be added as follows: 1st contact — 50 points, 2nd contact — 40 pts, 3rd — 30 points, 4th — 20 points, and 5th — 10 points.

VK/ZL on 80 Metres: As well as to overseas countries, contacts on this band between VK/ZL counts for points. Each call area of VK and ZL to be considered a scoring area.

VK/ZL on 160 Metres: As well as to overseas countries, for this band only contacts between VK/ZL, VK/VK, ZL/ZL, count for points. NOTE: an entrant may claim points for contacts in the same call area.

Final Score is the result of the QSO points plus bonus points for that band and final score is the result of the all bands score added together.

Logs. (a) Must show in this order: Date, time in GMT, Callsign of station contacted, band, serial number sent, serial received. Underline each new VK/ZL call area contacted and make separate log for each band used.

(b) **Summary Sheet to show** — Callsign, name and address (use block letters please) details of equipment used and for EACH BAND QSO points for that band and total of VK/ZL call areas worked on that band.

All Band score will be total QSO points multiplied by sum of VK/ZL call areas on all bands while "SINGLE BAND" scores will be that band's QSO points multiplied by VK/ZL call areas worked on that band.

Sign a declaration that all rules and regulations have been observed.

AWARDS

For Overseas Stations: Top scorer using all bands in each country (each call area in Japan, USA and USSR will be considered as a "country").

VK/ZL Stations: The W.A.W.I. will award Certificates as follows. 1. Top scorer on each band for VK, and ZL; 2. Top scorer in each VK and ZL Call area.

General: There are separate awards for CW and Phone. Certificates other than those issued above may be awarded and these will be determined by conditions and activity.

Listener's Section: To count for points, a VK or ZL station **ONLY** must be heard in a QSO and the following details noted in the log — Date, time in GMT, call of the ZL or VK station heard, Callsign of the station he is working, RS(T) of the VK/ZL station heard, band, points. Scoring is on the same basis as for the transmitting section and the Summary Sheet should be similarly set out.

Return of Logs posted to reach —

VK/ZL Manager — WIA, GPO Box 1002
Perth, 6001, Western Australia
or
N. Penfold, VK6NE, 388 Huntriss Road,
Woodlands, 6018, Western Australia,

before 31st January, following the contest. ■

20 Years Ago

with Ron Fisher VK3OM

JUNE 1955

It's hard to believe, but the 6146 tube is now over twenty years old. Philips had a front cover advertisement for this historic output tube on the front cover of the June 1955 Amateur Radio. Apart from the old 807 which is now around thirty-seven years old, the 6146 must rate as one of the most popular 'amateur' tubes ever produced. It's interesting to note that some of the very latest solid state rigs use the 6146 as an output stage.

An interesting group of technical articles appeared for June 1955.

In the first of a two part series, N. Southwell VK2ZF described the theory and construction of 'Wideband Phase Shift Networks'.

Construction of a Cheap Beam. Tom Athey VK5UT used a wooden frame to support an 8JK type beam cut for the twenty metre band. Tom used dressed pine which even today would be fairly cheap. Talking of the W8JK beam, I cannot think of anyone using this antenna any more. Although bi-directional they gave a useful amount of gain with the advantage of multi-band operation.

Have you ever gone portable? The late 'Pansy' Parsons took a lighthearted look at the combined effects of a quiet holiday and amateur radio. After much effort the only contact that eventuated was with an arch enemy from VK3 by name of Prescott.

Several new appointments were announced to Federal Executive. President and Vice-President were Bill Mitchell VK3UM and Max Hull VK3ZS. Other new members included Rick Ewin VK3AGC.

Bill Falconer, Bill Gronow VK3WG and George Glover VK3AG

The Editorial page for June 1955 took an appreciative look at the efforts of all who were working to the benefit of the Institute and its members. Many of those old-timers are still at it. ■

Intruder Watch

with Alf Chandler VK3LC

1536 High Street, Glen Iris. 3146

JUNE, 1975

It is with some feeling of satisfaction I have learned that the formation of the IARU Monitoring Service (IARUMS) Region 3 was achieved at the Region 3 Conference held in Hong Kong in March this year. It is now my responsibility to get the service working throughout the region, and it will take quite a deal of organising to obtain the co-operation of all Pacific countries.

During the last few months reports have been flowing in from Observers more readily than previously, and I must thank all concerned for their reports. Keep it up, fellows.

Unfortunately we are losing our VK3 Co-ordinator. Albert Cash has been doing that job for quite a few years now, and I must thank Albert and note that we are very appreciative of his efforts. It is with a great deal of pleasure, though, that I can announce the appointment of a new co-ordinator in the person of Ivor Stafford VK3XB. Ivor has had many years of successful participation in the Victorian Division affairs, and I do hope that Members will rally around Ivor to make the VK3 Intruder Watch one of the best in the Commonwealth. There are plenty of stations to report and many Observers are necessary to cover all bands.

Also it is with pleasure that I announce the appointment of Les Weldon VK2AFG as the new Intruder Co-ordinator for NSW. Members in VK2 now therefore have a focal point so please rally round and give Les your full support.

From my summary issued at the end of the three months to 31st March the following Intruders have been identified —

14030-14040 MOEX — A Red China CW station calling DVQT

14085 HZV — A North Vietnamese CW press in English and in Vietnamese.

14100-14130 ZCPU — A Red China CW station calling YMBK.

14250 BCX24 — A Taiwan CW station in Taipei Press in English.

7020-7030 NMOY — A Red China CW station calling WHQ4.

The Radio Peking stations are still operating broadcast in the 7 MHz band accompanied by the Russian jammers, who transmit an overmodulated A3 signal using Majak USSR 2nd program audio, to the dire detriment of Amateurs who use that band. Broadcasts in the 3.5 MHz band also seem to be becoming more prevalent.

I have reported all the above to our Authorities with a strong recommendation, now that the Australian Government has been sending delegations to Red China and to North Vietnam, for complaints to be lodged with the respective Governments.

I wonder if anything will eventuate? ■

Y.R.C.S.

with Bob Guthberlet

3 Bandon Terrace, Marino, SA

A recent Press announcement indicates that the Novice Licence will become available within the next few months. Supervisors and Club Instructors should start now preparing candidates for the first examination in June 1975. The format is a multi-choice (tick the right answer) type of theory exam and the normal ordinary Regulations exam we have all had to pass. The important message to clubs is that they should produce many candidates and justify this new licence.

To encourage students for future Amateur Radio Operating I suggest that Club Leaders promote Short Wave Listening, making an incentive award each month for the best DX logs. Remember . . . incentive recognition plays an important part in our TV and Radio "soap box operas" and brings results. Another vital factor in successful club management is the element of "surprise". Try something new — don't let your programs become stodgy and, most important, involve the parents.

What's in a name? The Federal Constitution awaits ratification by the Federal Council of the Wireless Institute of Australia. This and its predecessor designates that we are a "Youth orientated organisation. A suggestion has been made that we should consider changing the name to "Amateur Radio Training Scheme" the point being made that we have many adults associated with the Scheme. Now, please do not read this, shrug your shoulders, and say, "So what?" It will cost you just 10 cents and a scrap of paper to write me and express your opinion.

Are you aware that we are part of an organisation which purports to be communicative but which, in reality, is uncommunicative. Now for another suggestion should we delete the 'Hobby' from our Constitution, literature and publicity and substitute, say, 'leisure activity''? Again, I would appreciate your reply . . . just a scrap of paper ten cents and my address, 31 Bandon Tce Marino, SA, 5049 and I challenge you to prove me wrong about the 'uncommunicative' response to communication!

One of the major hindrances to club programs is that of finance. It would appear that in my case because we handle so little we do so little. However let us remember that we are responsible for the monies we receive and further if YRCS is to make successful application for Government assistance, it will be necessary to prove that we are worthy of such aid. Make sure that your club treasurer gives receipts, have more than one operator for the banking account, produce a yearly audited statement, and ensure that payments are made with the endorsement of a committee. Without these safeguards we can never hope to receive financial aid. ■

An A R Special
The 39th Annual Federal Convention of the WIA

The 39th Federal Convention of the Institute was held in the Conference Room of the Belvedere Lodge Motel in Richmond Melbourne over the Anzac Day weekend, Friday 25th April to Sunday 27th April, 1975.

The Convention was chaired by the Federal President, Dr David Wardlaw, VK3ADW

Divisional delegations were headed by Federal Councillors E. Perkis VK1VP (assisted by P Bowers VK1YS, Alternate Councillor) — I. Binnie VK2ZIU R. J. L. Kelly VK3NT (assisted by Alternate Councillor A. Moffat VK3FJ and observers A. M Goode VK3BDL I R. Morehouse VK3YAY and P S. D. Edwards VK3ZZU) L. Blagbrough VK4ZGL (assisted by Alternate Councillor N. F Wilson VK4NF), I J. Hunt VK5QX (assisted by Alternate Council or C. J Hurst VK5HI), N. R. Penfold VK6NE and P D Frith VK7PF

Others giving up all or part of their weekend to attend and assist in specialised spheres included members of the Executive K V. Roget VK3YQ, K. C Seddon VK3ACS and P. A. Wolfenden VK3ZPA as well as W E J. Roper VK3ARZ, M. J. Owen VK3KI, D. J. B. Hull VK3ZDH and J. B Payne VK3AZT — Editor of AR IARU Liaison Officer, Project Australis Chairman, and Federal Contest Manager respectively.

Recording equipment was loaned by Max Hull VK3ZS and both he and Cyril Maude VK3ZCK operated it despite some late evening audio interference from a 120 dB sound source close by in the same building The Convention ran daily from about 09.00 hours until 23.00 hours or later with short breaks for meals. Additional work continued into the early hours of the morning on several subjects requiring specialised debate or further clarification

This Convention can be labelled 'the Financial Convention'

Very lengthy and searching debates in committee highlighted in depth research into ways and means of combating the inflationary trends affecting the WIA — exactly as it does the whole of society. The problems were no less easy to resolve when it is remembered that the budget for the year was approved as long ago as the previous Convention and the budget under which the Institute's affairs were conducted last year was set out in April 1973. Some inflation had been foreseen and allowances had been made but in actuality the extent of the rises in costs exceeded all the estimates so carefully calculated for the budgets. Deficits therefore arose each year and have to be faced now rather than be allowed to accumulate to the extent of becoming lethal

The Institute at the Federal level is owned in equal parts by the Divisions and these are the members of the Federal body The Federal part of the Institute is and always has been, keenly aware that the whole of the WIA, including the Federal part, is supported by the members of the Divisions The WIA exists for the benefit of these members.

It was therefore exceedingly difficult and indeed necessarily unpalatable for everybody to realise that deficits can only be overcome by the efforts of the membership through the Divisional organisations as presently constituted Whether the necessary finances can derive from additional subscriptions, increased membership, fund-raising activities of various kinds or a combination of part or all of these or other means must rest with the Divisions. The Federal part of the Institute is small in numbers, limited facilities and merely exists as a central body to produce AR, to guard the amateur service at national and wider levels, and to provide various common services which can be more efficiently and economically carried out — in bulk as it were — on a centralised basis.

The Federal Council did not hesitate to demand a further financial review in August/September so as to examine at that time the further depredations of inflation. Each Division can thereafter decide its subscription levels for 1976 which must of course be finalised by November so that subscription notices can come from the computer for distribution. At this point in time the Council directed that the Federal element of RACT grade subscriptions for 1976 should be $14.50 — subject to the review in September This amounts to only 28 cents per week which in this light appears very reasonable when compared with the price of a daily newspaper It should be remembered that the rates for students and pensioners are considerably lower

Having got through this very complex and much undesired but exceedingly necessary business, the Council could then concentrate upon several other important matters requiring attention.

These included such diverse items as the IARU Region 3 1975 Conference recommendations, the urgent need for a properly qualified and impartial person to look into the whole of the WIA to report upon numerous aspects of the Institute including efficiency, administration and organisation, the very recent introduction of Novice licensing, the gathering storm clouds of the 1979 WARC where the whole frequency spectrum will come up for review by the ITU, and a number of domestic affairs requiring examination, revision or action

The Executive for the ensuing year was appointed and was the same as for the previous year except that Ken Seddon VK3ACS took the place of Jack Martin (departed to South Australia) and Russell Kelly VK3NT replaced David Rankin VK3QV (extended absences on business to Singapore plus his growing duties as Region 3 Secretary). See page 8 AR of May 1974. The Council was honoured with a visit and informal discussions with the DADG of the Radio Frequency Management Branch. Amongst other items he gave an outline of the work going ahead preparatory to 1st July 1975 when the Telecommunications and the Postal Commissions come into being of which the Regulatory and Licensing Branch (RFMB) would not form a part. As a consequence of re-organisation a Radio Act would replace the present WT Act and it was expected this would relate more closely to modern conditions. The arrangements made for Novice Licensing were outlined and it transpired that the theory exam for this would be of the multi-choice ('polysampling') kind although the Regulations exam would of course follow the same lines as this particular exam for the other two grades of Amateur Licence.

Very briefly, the following includes some of the other business conducted at this Convention:—

☐ The WIA follows a policy consistent with the aims of IARU Region 3 in relation to WARC 1979 and preparatory work for this including the following for all ITU Regions

- Return of 1800-2000 kHz band;
- Eliminate sharing 3500-400 kHz;
- Expand 40 m band to 7000-7500 kHz and eliminate sharing;
- New amateur bands about 10.5, 18.5 and 24 MHz;
- Expand 20 m band to 14-14.5 MHz;
- Expand 15 m band to 21-21.5 MHz;
- Retain 10 m band as it is,
- Press for retention of all presently assigned VHF/UHF bands, new amateur band at 220 MHz and obtain allocation of further amateur bands up to 275 GHz.

☐ A WIA item requires the Executive to pursue the return to us of 50-52 MHz

☐ Press for the amendment to ITU Radio Regulation 41 describing the Amateur service) which is phrased in such a way that anyone unfamiliar with Amateurs who reads the amended version can immediately see what the Amateur service does.

☐ Delete definition of "Amateur Satellite Service" which is of course the source of present satellite operations band restrictions.

☐ Apply the ITU fund towards the costs of any amateur delegate of the WIA officially participating in WARC 1979.

☐ Begin a fund-raising campaign for increasing the ITU fund.

☐ Support for WIA Project Australis, need for PR work, March visit of Mr D. Hull to the special meeting in Washington concerning, inter alia Oscar 8 and possible geostationary orbit such that contacts with KH6, J, VE, W, etc lands through such a satellite could be consistently better than present ionospheric unreliability of 20 m band.

☐ 1975-76 Call Book is under way but much work remains to be done This ands present contract and now must consider future of the publication AR quality and costings are under continue review — can only produce it from materials supplied by the members. Hamads from **non-members** increased in price in line with current commercial advertising rates recently increased. AR is vitally important to the membership.

☐ YRCS Constitution laid on the table

☐ Rules for all contests (including RD Contest) now in the hands of FCM, but VK6NE continues (with grateful thanks) VK/ZL/Oceania contest. Every contestant has own notions of what the rules should be and all ideas on this should go to FCM to help him in his work. Satellite endorsement for various VK awards to be investigated

☐ New 70 cm band plan now required in view of PMGs approval of allowing unattended repeaters and beacons between 430-440 MHz VHF/UHF Advisory Committee is active on this as well as the TV Channel 5A and Channel 0 problems. The present Committee will continue for another three-year term.

☐ Continuing requirement for a Federal Interference Co-ordinator but no volunteers appeared

☐ Federal WICEN Co-ordinator (VK1QJ) and Committee (to be set up in WIA ACT Division) were approved to improve VK-wide co-ordination plus liaison with NDO for emergencies (vide Cyclone Tracy experience, etc.)

☐ A very strong need was felt for a full-time Public Relations officer to "sell" amateur radio to the media but finances disallow this at present. Also the need to motivate every amateur to be an ambassador for amateur radio in the proper manner.

☐ WIA to negotiate for the removal of restrictions on Amateur RTTY transmissions in regard to frequency shift, code used and (from 1974) mode of identification (also applicable to ATV etc). Also WIA to negotiate for removal of separate ATV permits and /T suffix.

☐ Legislation be sought to control the sale of radio transmitting equipment to other than authorised persons.

☐ An attempt to standardise the nomenclature for 2 m repeaters resulted in the descriptions being —

Channel No.	Input	Output	Frequencies MHz	
1	42	64	146.1	146.7
2	44	66	146.2	146.8
3	46	68	146.3	146.9
4	48	60	146.4	147.0
5	43	65	146.15	146.75
6	45	67	146.25	146.85
7	47	69	146.35	146.95

☐ The Executive to investigate the production of a good public ity package with visual aids for use in high school and adult education projects and general interest lectures for the public

☐ The next (40th) Federal Convention was set down for April 30th-May 1st/2nd 1976 in Melbourne.

☐ Last, but by no means least, the appointment was approved of an expert and impartial investigator to inquire into and report upon the whole of the services and systems of the Institute from top to bottom as quickly and economically as possible. Mr Bob Arnold VK3ZBB was appointed to this important position and the Federal Council requested that all members should give him every possible assistance in carrying out his work so that his report can be completed about the end of this year

This is a brief and highly condensed summary of the work done at the 1975 Convention Any member desiring further details on any particular item should contact his Federal Councillor ■

The Executive Annual Report 1974 - 1975

STATEMENT OF INCOME AND EXPENDITURE

FOR YEAR ENDED 31st DECEMBER, 1974

		1974	1973
Income			
Members Subscriptions		$29,645	$24,397
Profit on sale of Publications — Schedule One		4,494	1,783
Interest on Deposit Monies		198	—
Sundry Income		223	1,261
Call Book		—	1,847
		$34,560	$29,288
Expenditure			
Loss—Amateur Radio—Schedule Two	$16,804		$11,339
Audit Fees	150		150
Accountancy Fees	—		189
Bank Charges	296		192
Contribution—IARU	850		814
Committee Expenses	377		393
Depreciation	403		146
EDP Expenses	825		834
General Expenses	346		128
Insurance	176		144
Licence	—		6
Project Australis	853		491
Provision for Bad Debts	—		200
Postage, Telephone, Printing & Stationery	3,064		2,577
Rent & Power	1,758		1,300
Repairs & Maintenance	79		99
Salaries	14,646		10,583
Provision for Superannuation	500		—
Travelling	960		116
TOTAL EXPENDITURE		$41,588	$29,702
Deficit—to Accumulated Funds		$7,028	$415

BALANCE SHEET AS AT 31st DECEMBER, 1974

	1974		1973
Members' Funds			
Balance, 31st December	$(357)		$58
Add Deficit for year	(7,028)		(415)
		$(7,385)	(357)
Reserve Fund	827		752
Special Funds —			
ITU Fund	7,206		6,903
IARU Fund	3,306	11,139	3,579
		$3,754	$10,877
This is represented by:			
Current Assets			
Cash at Bank—			
General Account	3,578		3,056
IARU Account	448		1,469
ITU Account	—		6,905
Special Bonds	7,000		—
Sundry Debtors	5,656		6,366
Less Provision for Doubtful Debts	(200)		(200)
Stock on hand — at cost	4,813		2,384
		$21,095	$19,980
Non Current Assets			
Furniture & Fittings at cost	2,162		741
Less Provision for Depreciation	(551)		(148)
		1,611	593
		$22,704	$20,573
Deduct			
Current Liabilities			
Sundry Creditors	3,325		2,782
Subs. in Advance	14,750		6,864
Loan—VK6 Division	250		250
VK4 Division	125		—
Provision for Superannuation	500		—
		$18,950	9,696
		$3,754	$10,877

1. In opening this annual report on behalf of the Executive, I would like to point out that this year has had some very successful aspects in the activities of the Institute. Unfortunately, however, one overpowering matter is causing a considerable amount of concern. Although at the last Convention we set our budget anticipating some degree of inflation, we were distinctly short of the mark.

2. This problem has been of utmost concern to the Executive which has spent a high proportion of time considering the matter.

3. The financial problems of the Institute highlights one of the major disadvantages in its set-up as it is at present operating. That is the inability to be able to react quickly to changes in the financial climate.

4. Consideration was given to areas in which we could make significant reductions in expenditure without upsetting the function of the Institute, bearing in mind the possibility that economies made in one year may have a harmful effect in subsequent years.

5. The Executive feels that an in-depth appraisal of the whole of the Institute, both at a State and Federal level, would be of great value and essential for our future planning in these days of change.

6. **Members of Executive**

The following were appointed at the 1974 Convention:

David Wardlaw VK3ADW, President; Jim Lloyd VK3CDR, Editor (executive position); Jack Martin VK3TY; David Rankin VK3QV; Keith Roget VK3YQ, Peter Wolfenden VK3ZPA.

7. During the year, because of his move to Port Lincoln in South Australia, Jack Martin had to regretfully resign from the Executive. I would like to express my appreciation to Jack for his untiring work on behalf of the Institute during his term of office on the Executive and especially for the personal support he gave me in his position as Vice President.

8. Ken Seddon VK3ACS, a former Victorian Division President, who has just returned to Melbourne after having spent the last three years in the USA, has been co-opted to Executive to act until the 1975 Federal Convention.

9. Keith Roget was deservedly appointed Vice President for the year and remains Honorary Treasurer, where his meticulous attention to the affairs of the Institute in these times of financial problems has enabled Executive to form a current picture of the Institute's finances as the year progressed.

10. Peter Wolfenden as Chairman of the VHF/UHF Advisory Committee has been able to keep Executive especially well informed on VHF and UHF matters.

11. David Rankin, because of his long association with the Executive, has been a valuable member. However, David's business commitments have again caused him to spend more time overseas than he thought at the beginning of the year. David is also the Secretary of the IARU Region 3 Association.

12. Jim Lloyd has been invaluable for his involvement in matters concerning Federal WICEN.

John Bennett VK3ZA as our PRO has been able to give some excellent assistance although, unfortunately, not as much as he would have liked.

13. The following tabulation sets out the attendances at Executive meetings.

	Possible	Attended
Executive:		
Dr. D. Wardlaw	15	15
Surg-Capt. S. J. Lloyd	15	10
Mr. K. V. Roget	15	15
Mr. D. H. Rankin	15	7
Mr. J. Martin	2	2
Mr. P. Wolfenden	15	15
Mr. K. C. Seddon	6	7
Assisting:		
Mr. W. Roper	15	11
Mr. D. J. B. Hull	15	7
Lt.-Col. J. Bennett	15	4

THE FEDERAL OFFICE

14. Shortly after the last convention the negotiations for new office space were concluded. This enabled us to move out of our completely inadequate accommodation into an office which provided facilities of a nature far in excess of the additional rent. Peter Dodd has been able to organise the arrangement of the office in such a manner that it is much more comfortable for those being asked to work there.

15. In fact, in retrospect it is hard to see how we were able to keep any employees when the physical nature of the former office was considered.

16. This year Colonel Perry has continued with us on a part-time basis handling the routine EDP matters, thus leaving Peter Dodd freer for other important matters.

17. On the secretarial side we have not been so fortunate, as Mrs. Wendy Hopkins, who showed great promise in her understanding of our requirements, resigned during the year to go overseas. Since then we have had little success in finding a full time suitable replacement.

18. Due to the much higher than anticipated wage rises, secretarial aid in the office is one of the areas of steeply rising costs. Part time assistance is being used as an economy measure, and is proving highly satisfactory.

19. To take care of AR advertising and other routine time-consuming matters concerning printing and distribution of the magazine, we recruited Tom Cook. He is with us on a part time basis and is doing an invaluable job.

20. Even more highlighted over the Christmas period this year, because of the loss of our experienced typiste-clerk, is the desirability of cyclic billing. This would spread this aspect of the work over the whole twelve months instead of a three month rush.

21. The move into the new office made it necessary to purchase some office furniture and shelving. However, we were lucky as the previous tenant left his partitions and air conditioner at no cost to us.

22. There is a great need for a new copying machine, as the present one is wasteful of both time and materials. However, it seems at present that the purchase of such a machine is beyond our resources.

23. In concluding on matters concerning the office, I must pay tribute to our Manager, Peter Dodd, for the manner in which he, realising the drastic effect inflation was having on our resources, initiated as many economies as possible. However, the Executive feels that if the office is to provide the service to the Institute that the Council expects of it then there is a limit to the economies which we can apply.

24. To keep the Federal Council informed of the happenings in the Federal sphere, the minutes of Executive meetings are produced in an expanded form rather than giving just the bare facts. Also distributed are mid-monthly circulars which provide more detailed information on Institute affairs, material for Divisional broadcasts and Institute operating instructions, e.g. EDP forms.

25. As a further aid, notes of meetings with the APO etc. are distributed, as also are notes on Committee meetings held in Melbourne, such as Publications Committee and VHFAC.

26. It is very pleasing to note that the newly formed ACT Division is participating wholeheartedly in the affairs of the Institute.

28. **Handbook for Amateur Operators**

Since the resignation from Executive of Jack Martin VK3TY very little further work has taken place in this area. The matter is further complicated by the shortage of staff within the post office and their present concern with reorganisation.

29. **Trophy**

Our thanks to Peter Brown VK4PJ for the receipt of his Contest Championship trophy which he donated and which was gratefully acknowledged in Minute 74.17.19. Details of the administration of this Award are being worked out.

30. **Repeaters**

It is heartening to see that all States are now convinced of the desirability of a uniform repeater plan and are willing to conform. There has been some confusion with regard to the requirements of licensing of repeaters, but following representations to the APO it is hoped that national uniformity will be achieved. However, there are some areas where further clarification is still required and undoubtedly negotiations will have to continue.

31 The Victorian Division is to be thanked for their position paper on Repeaters which covered the matter very thoroughly and gave the Executive some useful up to date material on the matter

32. It has become apparent that at least four primary repeater channels will be necessary to provide interference-free coverage; in fact it may be necessary to employ several of the secondary channels as well

33. Band planning is good frequency management and it is to be hoped that as frequencies are now available for repeaters in the 70 cm band, planning will be definite and will be adhered to by all States Any changes should thereafter only be made as a last resort for extremely good reasons.

34. **Changes in TV Channels**

The result of the FM inquiry is now common knowledge. VHF-FM means that two TV channels have to move. This has resulted in more use being made of Channel 5A adjacent to the 2 metre band and also another of Australia's non-international standard allocations.

35. Realising that there may be problems for amateurs, aid was sought from those in areas already served by Channel 5A; unfortunately, the reports did not provide sufficient conclusive evidence of the problems which may evolve.

36. Personal representations have been made to the ABCB and also a detailed letter to the Post Master General and the Minister for the Media, expressing our concern and pointing out the desirability of UHF/TV. We have an assurance that in no case will Channel 0 and Channel 5A be allocated in the same area.

37. **70 cm Band Plan**

The VHFAC, after considerable work, produced a band plan which has been published in AR for comment. Much to their disappointment very little was forthcoming, and most of that because of direct approach by members of the VHFAC. It now seems that in view of the frequencies just made available on the band for unattended repeaters and beacons, the plan will have to be modified.

38. **WIA Project Australis**

The last year was a very satisfying one, with the successful launching of Oscar 7 and Oscar 8 still operating.

39. In December, David Hull VK3ZDH received an invitation to attend an AMSAT Experimenters meeting in the USA. After consultation with the Council it was decided that David must go as matters of vital importance were to be discussed. Executive was to underwrite the trip and Divisions were asked to help later on a pro rata basis.

40. **Intruder Watch**

It is pleasing to report on the continued activity our Intruder Watch organisation, one of the three leaders in the world. Our sincere thanks to Alf Chandler VK3LC for his dedication throughout the year A proposal by the WIA for Region 3 co-ordination was carried by the Region 3 Conference and Alf will act as Co-ordinator for the whole region.

41 **IARU**

The most important IARU matter to be reported is the IARU Region 3 Association meeting which was held in Hong Kong during March. Attending this meeting were representatives of eight member countries, together with further representatives from three other countries not yet members of the association. The major concern of all those attending was the protection of Amateur frequencies and privileges.

42. Some very interesting discussions on the material presented took place, the details of which will be presented by the IARU Liaison Officer in his report. A few points are worthwile including here by way of reinforcement. General support was given to the proposals for additional HF bands. statistics show that there will be about one million Amateurs in the world by 1982. It was pointed out that the increasing use of satellite systems has meant that many fixed services would no longer need their HF allocations. The original allocation of amateur bands on a harmonic frequency basis did not give enough scope in the upper part of the HF spectrum to make full use of ionospheric propegation in maintaining reliable communications on a world-wide basis.

43. The Conference also felt, as does the WIA, that further bands should be allocated above the existing highest of 24 GHz During the next twelve months it is hoped that agreement will be reached as to what bands to keep.

44. The matter of representation at WARC 1979 was discussed and I would like to make the following points

It was apparent from the statements of VE3CJ, W1RU and ZL2AZ, who have all attended ITU Conferences, that a strong team is essential to share the load and that continuity is important. However, it is predicted that WARC 1979 may last for 10 weeks and this poses problems as far as IARU representation is concerned.

45. On the financial side, the whole conference expressed their gratitude to the JARL who undertook to subscribe an additional 800,000 Yen ($2100) per year for three years, the purpose of which, as they stated, was for the defence of frequencies used by the Amateur service.

46. It is also pleasing to note that the number of Societies belonging to the Region 3 Association has risen to 11.

47. The subjects mentioned only give a meagre outline of the matters discussed. It was very apparent to me that each country not only has problems which are specific to it alone, but also has problems which are common to us all I feel that the value of personal discussions with the representatives of such a widespread number of Societies is of inestimable value, amongst other things, in helping to unify the approach to be made to the administering authorities by the various Societies. It is also helped to explain the attitude of certain authorities in their approach to the Amateur service.

48. On the way to Hong Kong, a call was made in Singapore on the officers of SARTS and some very profitable discussions took place.

49. A stopover was made in Jakarta on the return journey from Hong Kong and a meeting was held with the officers of ORARI which at the moment is not a member of IARU. It is likely that they will join later this year with the final formation of the National Society. A detailed report and assessment of the situation in Indonesia will be presented to the Council separately.

50. **WICEN**

Cyclone Tracy's destruction of Darwin on Christmas morning and the subsequent apparent breakdown in public communications created a situation in which Amateur Radio became involved as a communications link with an isolated ravaged city. At the time of writing this, the final reports on the Amateurs' participation are yet to be received.

51 Over the last two years the matter of Federal WICEN has been discussed by the Federal Council, and the general feeling generated was that the States are operating satisfactorily on their own and a Federal WICEN man would be acceptable as long as he did not interfere in the relationships between the various States and their authorities.

In the latter half of last year, the Natural Disaster Organisation was set up with HQ in Canberra. Contact was made with the NDO and preliminary submissions on the usefulness of Amateurs brought to the notice of the Co-ordinator

52. The cyclone arrived before the full potentiality of Amateur Radio had been able to be assessed, and it is possible that full use was not made of the HF links available. This was a disaster the influence of which extended far beyond State boundaries and obviously required a different type of WICEN co-ordination to that already existing.

John Battrick VK3OR and Jim Lloyd VK3CDR have investigated the matter and it is raised as an agenda item at this Convention.

53. **Darwin Appeal**

In order to provide some assistance for those Amateurs who lost their possessions in Cyclone Tracy, an appeal has been opened and I commend this to you.

54. **Aero Modellers**

During the year a meeting took place between members of the Executive and authorised representatives of the Aero modellers who were empowered to speak on a National basis. The complexities and problems of radio control were explained to us and, although there appeared to be no proven cases of interference it was agreed that some tests should take place The Victorian Division was approached and offered to help

55. **YRCS**

This has been another year of hard work for our YRCS administrators with a Convention being held in Maitland.

A YRCS Constitution is presented to this Convention for ratification.

Thanks go to Bob Cuthbertet for his dedication to the cause during the last year

56 **Amateur Radio**

It is really encouraging to see the high standard of the magazine being maintained by the hard-working Editor, Bill Roper VK3ARZ, and his willing Committee.

Rising printing and paper costs and postage charges have been a worry However, it is pleasing to note the report of the good supply of quality technical articles coming in

57 Since the introduction of EDP labelling, the number of missing ARs has reduced dramatically This is a distinct saving as replacing missing copies has to be done by hand and wastes both time and money.

58. The EMC issue of AR produced by the Publications Committee in September evinced very favourable comment both from within and outside the Institute

59 **Post Office**

During the year our relationship with the Post Office has been most cordial and regular meetings have taken place between members of the Executive and departmental officers Agreement has been reached on most matters raised. However, there are several items on which negotiations are still taking place, for example, Identification for RTTY

60. You will be glad to know that permission has been granted for the use of unattended repeaters and beacons on a portion of the 70 cm band

61 Reorganisation of the APO takes effect on the 1st July, 1975, and as from that date the Regulatory and Licensing section of the Post Office will be a separate entity under its own control

62. **Licence Fee Increase**

The Executive, together with all other Amateurs, were shocked to learn in the Federal Treasurer's budget speech of the 100% rise in licence fees.

Immediate protests on your behalf were forwarded to the Treasurer, Post Master General and Leader of the Opposition Members were urged to protest to their own MHRs and Members.

63 A reply was received from the Post Master General which you have all no doubt read However, we do not consider the matter closed and further approaches to MPs are being encouraged

64 **27 MHz Problems**

As you are all no doubt aware, political pressure is being brought to bear by the illegal users of 27 MHz hand phone equipment to legitimise this type of use. At this stage I would like to quote a resolution passed at the IARU Reg on 3 Conference.

"This Conference noting

1 That the question of frequency allocations will be reviewed generally,
2. That frequency bands allocated to the Amateur Service are for use by duly qualified persons
3 That the competing justifications for frequency allocations of all users is integral to the determination of frequency allocations

This Conference views with concern the allocation of radio frequencies for so-called citizen band use and resolves that it is opposed to the use of radio frequency on a hobby basis by persons without proper and adequate technical qualifications and urges Member Societies to ensure that the technical qualifications required by their respective administrations for licensing in all portions of the spectrum shall be of a standard such that the principles of good radio frequency spectrum management shall be universally maintained "

65. At previous Federal Conventions the Federal Council has deplored the proliferation of unlicensed operators and their behaviour also the ease with which they can obtain equipment

66 Believing that the novice licence would provide an outlet for some of these operators. the Executive again pressed the matter of the

novice licence with the Post Master General who replied that the matter was in hand. We are led to believe that we may see novices on the air before the end of the year.

67. I would like on your behalf to express our gratitude to all Federal Officers of the Institute. These volunteers give numerous hours of their time in order that the majority of us may derive more pleasure out of Amateur Radio.

68. In conclusion I would like to thank all the members of Executive for their unfailing assistance during the year.

DAVID WARDLAW, Federal President

APPENDIX B

MEMBERSHIP AND OTHER STATISTICS

1. The following table sets out the membership details adjusted to 31st December, 1974 compared with total licensed amateurs (figures courtesy Radio Branch), percentages and totals for the previous years below.

	Total Licensees	WIA licensed members	% members to total licensees	Other WIA members	Total WIA members
VK1	126	64	50	26	90
	127	44	34	10	54
VK2	2200	988	44	225	1193
	2051	997	45	386	1383
VK3	2122	1083	48	356	1449
	2057	1041	50	396	1437
VK4	781	426	55	174	600
	776	436	51	140	576
VK5/8	843	451	54	186	637*
	808	428	52	186	623
VK6/9X	526	266	51	83	331
	516	254	49	69	323
VK7	238	160	67	53	213
	239	152	63	63	215
VK0	8	—	—	—	—
TOTALS	6841	3420	50	1093	4513
	6674	3292	49	1096	4417
*Includes the following Junior Associates:					
VK5	—	8	—	31	39
				29	

2. The licensees distribution was as follows:

	Full	Limited
VK0	5	—
VK1	101	25
VK2 (1 on Norfolk)	1547	626
VK3	1333	786
VK4	529	252
VK5	590	255
VK6 (5 on Christmas Is. & 1 on Cocos)	387	139
VK7	157	81
TOTALS	4665	2176 = 6841

3. PNG statistics — At 31.12.74 the following are the nearest available statistics:

	Full	Restricted	Other
Licensed Stations	70	17	—
Members of the WIA	21	2	8

4. The following WIA preliminary membership statistics may be found useful for comparison purposes (F — Full, C — Country Full, A — Associate; T — Country Associate):

Division	F	C	A	T
VK1	69	2	24	1
VK2	596	8	200	1
VK3	709	284	215	77
VK4	212	185	69	79
VK5	323	94	98	39
VK6	161	62	31	18
VK7	162	1	60	—
	2533	616	681	209

	Pensioners & Students Licensed	Pensioners & Students Unlicensed	Clubs Licensed	Clubs Unlicensed
VK1	—	1	2	—
VK2	40	14	9	8
VK3	79	68	14	2
VK4	15	27	8	2
VK5	19	28	3	1
VK6	13	13	7	1
VK7	2	4	—	—
	168	150	43	14

	Life Members Licensed	Life Members Unlicensed	Family Members Licensed	Family Members Unlicensed
VK1	1	—	—	—
VK2	9	2	—	—
VK3	4	1	3	3
Exec.	8	—	—	—
VK4	2	1	4	2
VK5	3	—	1	—
VK6	4	—	—	—
VK7	5	—	1	1
	36	4	9	6

	2nd Call Signs	Jnr. Associates
VK1	1	—
VK2	3	—
VK3	5	—
VK4	—	—
VK5	1	8 + 31 = 39
VK6	1	—
VK7	—	—
	11	39

5. For those specialising in statistics the following preliminary figures relate to licensed members:

Division	Code 1	2	3	4	5
VK1	46	—	5	10	—
VK2	300	3	393	239	24
VK3	348	5	418	232	78
VK4	309	2	1	121	—
VK5/8	301	—	2	113	—
VK6	209	—	—	49	—
VK7	109	1	—	51	—
	1622	11	817	815	102
			11	102	
			1622		
			2450	917	

Code:

1 — 2 letter calls; 2 — 3 letter C calls; 3 — 3 letter calls, other; 4 — Z calls; 5 — Y calls.

Notes.

(a) VK8 members possessed 15 full and 8 restricted licensee members plus 9 SWLs.

(b) Broken Hill reflected 4 full calls included in VK5 members.

(c) The XYLs are represented by 14 with call signs and 14 without.

The following additional call signs statistics are to be added to the above:

Division	Code 1	2	3
VK1	—	—	—
	Full	Limited	
VK2	7	4	2
VK3	9	3	13	—
VK4	16	4	10	5
VK5/8	7	2	4	6
VK6	5	1	—	2
VK7	1	—	—	—
	45	14	31	16

Code:

1 — Call signs of members from other States but no call sign advised for their new State of residence.

2 — Associate Grades with call signs (i.e., re-grading not done).

3 — Full Members without call signs (i.e., possessed overseas call but no local call advised, etc.

6. All members are urged to advise the Executive office of any changes in address, callsign, etc., so that the membership records can always be kept up to date. ■

VHF UHF
an expanding world

with Eric Jamieson VK5LP

Forreston S A 5233

Times GMT

VK0	VK0MA, Mawson	53 100
	VK0GR, Casey	53 200
VK1	VK1RTA, Canberra	144 475
VK2	VK2WI, Sydney	52.450
	VK2WI, Sydney	144 010
VK3	VK3RTG, Vermont	144.700
VK4	VK4RTL, Townsville	52 600
	VK4WI/1, Mt Mowbullan	144 400
VK5	VK5VF, Mt. Lofty	53.000
	VK5VF, Mt. Lofty	144.800
VK6	VK6RTV, Perth	52.300
	VK6RTU Kalgoorlie	52 350
	VK6RTW, Albany	52.950
	VK6RTW, Albany	144.500
	VK6RTV, Perth	145.000
VK7	VK7RTX, Devonport	144.900
P29	P29GA, Lae, Niugini	52.150
3D	3DAA, Suva, Fiji	52.500

No changes to report in the beacon listings this month. However, I do seem to recall reading or hearing somewhere that the 6 metre beacon in Darwin was running again on a restricted schedule — I cannot be sure of this, but I may have been told this on the air. Maybe something definite with this in time for the next issue.

Keith VK2BGZ (ex VKOMX) has written in response to my requests in regard to VK0 beacons and their operation. He reports the two beacons should still be in operation. He left Casey early in February this year and at that time the Casey beacon was on the air 24 hours a day with about 100 watts output MCW to a 3 element yagi horizontally polarised beaming to Australia. He says the Mawson beacon is identical except for frequency, and believes it still to be operating. Both beacons were constructed by the Ionospheric Prediction Service Branch of the Department of Science. Thanks for the info Keith.

So now we know. All will be hoping both beacons will still be in operation for the end of the year when it may again be possible to hear them, and make further contacts to the VK0 continent.

TWO METRES IN THE USA

Graham Wiseman VK6ZAD has recently returned from a stay in the USA and in response to my request has supplied the following information on operating conditions in the USA.

"In the New York area activity is intense, with forty-five 144 MHz repeaters regularly on the air and quite a few others on intermittent y. The repeaters are run by clubs, groups and even private persons. An example of such a club is LIMARC (Long Island Mobile Radio Amateur Club) which has over 350 active members, and operates 144 MHz repeaters and one 440 MHz repeater. Because of their emphasis on mobile operation and due to the crowded conditions, timers are often set to 50 or 60 seconds. All repeaters are remotely controlled. Many of them have autopatch facilities whereby an appropriately equipped member may "dial" through the auto telephone network from his car.

"Repeaters are spaced every 15 kHz from 146 to 146.4 MHz (inputs), 146.6 to 147.4 (outputs), and 147.6 to 148 MHz (inputs) with the spaces in between used for simplex operation. From where I was staying, running 25 watts into a half wave vertical, I could on several frequencies hear 4 squelch tails following my transmission, indicating I had keyed up 4 repeaters simultaneously. DX activity on FM is not very practicable due to the extremely crowded conditions.

"OTHER MODES. On 144 MHz there is a large amount of AM activity between 145 and 148 MHz with SSB and CW activity mainly from 144 to 144.2 and 145 MHz. At times of contests and DX openings there will be hundreds of stations in the north-east USA area operating below 148 MHz.

"144 MHz EME activity is high with unscheduled contacts and even QRM from other EME stations being common, especially during the "universal

window" (where both California and Sweden can see the moon). Successful EME antennas range from simple 4 yagi arrays through the popular 160 element collinear, to a 150 foot dish.

"Satellite activity also is quite high, with the satellites undergoing considerable desensitisation when over North America. There are 4 continents and many countries within range of north-east USA so that better equipped stations can readily work good DX.

"Some operators, myself included, have spent considerable time investigating 29 MHz downlink antennas for Oscar, and the general consensus of opinion is that this is the area where most problems exist. El-Az beams are quite practicable for 144 and 432 MHz, and many are used, but they get cumbersome on 29 MHz.

"All these comments are orientated towards 144 MHz as that was all the gear I had". . . . Many thanks for that information Graham, I am sure it will be of interest to readers, and many will heave a sigh of relief that such crowded conditions do not exist here, but 50 times as many as normally operate on the lower end of 2 metres here in Australia would help to keep hungry fingers off our bands!

NEW AUSTRALIAN UHF RECORD

Ian VK3ATY and Alan VK3ZHU have received confirmation of their new Australian record for 2304 MHz which was mentioned previously on this page. The computer distance shows 130.791 miles or 210.487 km. I am sure readers will join with me in congratulating these two boys for their outstanding effort. Who will be next?

THE LONDON SCENE

Mike Farrell, G4DJV (ex VK2AM) writes from London with some news of VHF activity in England, and this too should be of interest to readers.

"I have been operating as G4DJV on 2 metres very intensely, also a couple of contests. 144 MHz in England is a far cry from that in VK. The Belcom Liner 2 has provided an enormous boost to SSB here, there must be hundreds of Liners on the band, and long haul contacts into Wales, North England and the continent are common.

"FM is becoming popular here, but the Gs have avoided the blind development or repeaters as in VK, there are only 2 repeaters going in Eng'and at the moment. Most FM operators are aware of what is happening in other parts of the band — a healthy sign.

"UHF is popular — 432 MHz gear (amateur) is available commercially — varactors, converters and even transverters can be bought from several places, so no lack of activity here. Much interest in 1296 and 2304 MHz as well; there are several up there using SSB, usually HBR hybrid ring mixers and 2C39As.

"I have been collecting bits such as VHF and UHF power transistors, type 'N' and 'BNC' connectors etc. as they are cheap here. I have been converted to solid state VHF SSB so will be busy when I return. Certainly miss 6 metres over here; 4 metres (70 MHz) is no substitute — little activity and no DX as it is only a G allocation". . . . Thanks to you Mike for writing, and glad to know you still follow us through the pages of AR even if several months old by the time copies arrive.

6 METRE ACTIVITY IN PAPUA NEW GUINEA

Mike Hennessy, P29ZMJ, has written from Konedobu, PNG with some news of what is going on in that area on six metres. He reports that at present there are 4 operators on 6 metres in Port Moresby, being P29GR, P29ZFS, P29ZJW and P29ZMJ, and more are expected to be on soon. A scheduled Sunday morning net operates on 52.050 MHz at 2300Z, and by the time this is read, on 52.525 FM.

Mike mentions openings to the south seem very rare, and on occasions when the band has shown signs of being open, nothing is heard. He wonders if anyone is aware of their existence. Maybe the backs of all VK beams are on them! Most activity of course takes place at the weekends, but if anyone would like to set up a schedule, it is suggested they write to Mike, P29ZMJ, PO Box 2237, Konedobu, PNG; all letters will be answered, and beams will be pointing south for sure.

Plans are being made for the establishment of a 6 metre beacon in Port Moresby, and by the time the next "DX season" arrives it is expected there will be quite a lot of 2 metre activity up there as well. That last bit makes very good news indeed, and will have the Queensland boys think again about their 2 metre activity. It would be a good water path from the coastal areas to PNG so why not try it?

For the sake of the record, Mike includes these log entries which indicates not too much worked south. 27/12/74 2325Z P29GR Garry worked Lindsay VK4AAL on 52.050 SSB. 2336Z worked Claude VK4WX. 19/1/75: P29ZMJ worked VK4EN, Ron, on 52.525 FM, at 0630Z. 16/3/75: Ch. 0 Brisbane S9+ at 0600Z. 25/3/75: Townsville beacon S2 all day. 28/3/75: 2300Z, Ch. 0 Brisbane S9+. Will be pleased to hear from you again some time Mike, and I hope in the meantime you can have a few more contacts to keep up your interest.

52 MHz AND THE USA

This month the news seems to be coming from all over the globe, so much so that I was pleasantly surprised to find a large air mail letter on my desk recently from Ray Clark, K5ZMS, 7158 Stone Fence Drive, San Antonio, Texas, 78227. I would like to quote portion of Ray's letter.

"I had the privilege of reading your column in AR recently in the March issue sent to me by Peter VK6ZDY. It has a lot of interesting info in it, particularly about the beacons. There are a number of us here in the States who are already thinking ahead to the next solar peak and we are starting to prepare again. I think the major reason we had no contact last time, is that many people were not listening at 52 MHz and above. Many did not know what to listen for. We had openings into ZL areas, but nothing much to your area. We hope to correct that, by providing up-to-date info on what to listen for as indicators of openings into your area.

"I am Secretary/Treasurer of SMIRK (which stands for Six Metre International Radio Klub 6-8 Not). We are also engaged in fighting the RFI problems existing in this country, which are causing many people to leave 6 metres for other bands. Our membership stands at 744 in 46 States and 13 countries, after 1½ years operation.

"To become a member, stations outside the USA need to contact three members of SMIRK. Peter VK6ZDY is the only VK station to qualify so far, with contacts to members HL9WI, JA1LZK and JA1RJU. The one time membership fee is $2 US.

"For years, no one knew what other 6 metre operators in different parts of the world were doing. I have been maintaining a running correspondence with JA1LZK and JA1RJU on their activity over there and telling them about ours here. I do the same with KG6JDX and others in Central and South America. I do my reporting of activities to 73 and QST magazines, so others might find out what is going on. I also add it to our quarterly newsletter that goes out to our members . . . "

Well, that all makes rather interesting reading, and I think I will take up Ray's offer to start correspondence between us to let each other know of developments in our respective countries. At the very least we should have some prior knowledge of what goes on in the USA and other member countries, and this can be passed on to you, the readers, through these pages.

At last it looks as though interest overseas is being shown in our 2 MHz removed allocation. Other countries at last recognise we cannot go down below 52 MHz to speak to them, they must come up and speak to us. However, if they want to get really serious about this, they will also need to make some alterations to their equipment. Large yagi antennas designed for optimum results at 50 MHz are of little use on 52 MHz, so new antennas will be needed. Retuning of transmitting and receiving equipment also will be necessary, though with today's modern transceivers with only one control needing peaking makes this part quite simple. Success will largely depend on what effort is put into the antenna system, and I will emphasise this point in correspondence. 1978 and 1979 should see the start of something worthwhile in across the Pacific contacts if they are going to happen during the next 11 year peak. In the meantime, VK stations should be looking at their equipment needs in the future, with those on the eastern sea-board area having the best chance due to a long water path with little land in between.

THE LOCAL SCENE

Most of the local activity seems to be concerned with DX via the various FM repeaters, notably to Mt. William (Ch. 1) in Victoria. Some contacts have been made to Mildura and Broken Hill from VK5, with Peter VK5ZPW at Angaston operating from his favourite hill being amongst the forefront of activity, and with Keith VK5ZMK at Waikerie also sharing.

Certainly it is surprising how far contacts can be made using a repeater situated on a high spot, but it would be also nice to see something of the same thing being done on the low end of 144 MHz, in the hope that the increased activity will deter the "greedy Fingers" of other interests from wresting those lower 2 MHz from us.

Other than the above, there is little to report. There have been the occasional Es openings on 6 metres, with the TV stations acting as the main beacons.

50 MHz: LU3EX — JA6FR, 12000 miles. 24.3.56.
144 MHz: WA6JRA — KM6GRU, 2591 miles. 29.7.73.
220 MHz: W6NLZ — KH6UK. 2540 miles. 22.8.59.
420 MHz: WODRL — K1PXE. 1210 miles. 16.8.71.
1215 MHz: WA2LTM — W9WCD, 770 miles. 26.10.72.
2300 MHz: W6FZJ — WA6HXW, 330 miles. 6.2.74.
3300 MHz: W6IFE/6 — K6HIJ/6, 214 miles. 18.6.70.
5650 MHz: K6HIJ/6 — W6OYJ/6, 214 miles. 18.2.70.
10000 MHz: W7JIP/7—W7LHL/7, 265 miles. 31.7.60.
21000 MHz: G3BNL — G3EEZ, 45 miles. 12.11.72.

The above are the latest Two-way Terrestrial records according to March 1975 QST. However, I think the 420 MHz record will return to Australia with the contact between Les VK3ZBJ and Wally VK6WG on 2.2.75 over a distance of about 1450 miles. Once this has been confirmed the boys in the USA can amend their records!

EME TWO-WAY RECORDS

50 MHz: WA5HNK — K5WVX, 415 miles. 30.8.72.
144 MHz: SM7BAE — ZL1AZR, 11055 miles. 4.3.69.
220 MHz: WB6NMT — K2CBA, 2650 miles. 16.3.70.
420 MHz: VK2AMW — G3LTF, 10530 miles. 30.3.74.
1215 MHz: WB6IOM — G3LTF, 5492 miles. 27.4.68.
2300 MHz: K4RJ — W6YFK, 1975 miles. 22.11.72.

All records information by courtesy of Ray K5ZM8.

It is interesting to note that in all 16 records have been set down, and of these 13 have been established or re-established since 1969, that is, in the last 5 years. About the only hope for a 144 MHz record to be set in Australia would be for Albany to work into New Zealand; the USA record of 2591 miles will be hard to beat, unless someone works to Hawaii from the east coast of Australia. I have not heard of anyone trying yet, but it should not really be impossible. Anybody with a stack of 8 rhombics on the shore?

Do not forget the South East Radio Group Convention at Mt. Gambier over the Queen's Holiday weekend, 14th and 15th June. Should be a good show as usual. Most of those likely to be interested would have already received registration forms.

That should give you enough to read for now. Closing with the thought for the month: "People who value their privileges above their principles soon lose both".

The Voice in the Hills. ■

Awards Column

with BRIAN AUSTIN VK5CA
P.O. Box 7A, Crafers, SA. 5152

This month I am publicising two Awards which may be described as "temporary".

The first, the "Amsterdam 700 Years Award" has been made available to commemorate the 700th anniversary of the founding of the City of Amsterdam in 1275.

For this purpose a special amateur station PA700ASD will be on the air almost every day on all bands, both CW and SSB. All contacts with this station will be confirmed by a special QSL card, and SWL reports will be confirmed in all cases. Amateurs living in the City of Amsterdam may change their prefix from PA0 to PA7 and will confirm contacts with a special QSL card. The Award is open to every licensed amateur and SWL.

Rules: Contact with a PA0 station living in Amsterdam counts one point; contact with a PA7 station counts two points; contact with PA700ASD counts four points. Dutch amateurs and SWLs need 15 points, European stations need 10 points, DX stations need 5 points. Only one contact with the same station is permitted. All QSOs have to be made in the year 1975. There are no band and/or mode limits. Awards will be endorsed for all one mode, all one band etc.

Application: Send certified loglist (no QSLs) and

4 IRCs or 1 US dollar before 1st March 1975, to VRZA Awards Manager, PO Box 190, Groningen, The Netherlands.

The second Award, which might prove a little difficult to obtain here in VK, is the first Award to be issued in Greenland.

This Award is to commemorate the bi-centenary of the founding of the town of Julianehaab on 7th April 1775 by Anders Olsen. Today the town is the biggest in South West Greenland with a population of 2,900 of whom 15 are licensed amateurs.

To obtain the Certificate it is necessary to gain 200 points. All HF bands are permissible and there are three classes — phone, CW and mixed. VHF, UHF or Oscar can be used if available here, but not crossband QSOs on HF or repeater contacts.

Points are scored as under — 20 points for the first QSO on any band with any one of the stations in Julianehaab, but 30 points for an Oscar 2m — 10m QSO and 40 points for an Oscar 70 cm-2m QSO.

The same station can be contacted three times on the same band but with a minimum of one month between the first, second and third QSO. The second and third QSO will only give 10 points each.

Send your request for the certificate with details of your callsign, date and time (GMT) with your report to OX3AB, Arne Pedersen, PO Box A5, DK-3920 Julianehaab, Greenland, with 5 IRCs to cover postage. The necessary QSOs will be cross-checked with the named OX stations, whose log books are decisive.

The certificate applies to QSOs from 7th April 1975 to 6th April 1976 inclusive. The issue of certificates stops at the end of 1976.

At present, the following stations are located in Julianehaab: OX3AB, AC, BY, CS, EL, FG, HA, KS, LA, MD, PN, RA, RF, WX and ZM.

Even though you might find the certificate rather difficult to attain, those who need a few OXs should find it a bit easier while the Award is current.

By the way, if you work an OX who tells you that his QTH is Qaqortoq, it's OK. That's the Greenlandic name for Julianehaab. ■

Around the Trade

LUCAS MARKET SOLAR POWER IN AUSTRALIA

Joseph Lucas (Australia) Pty. Ltd., Cheltenham, are proud to announce that they have now concluded an agreement with the Solar Power Corporation of America for marketing rights in Australia of their Solar Electrical Energy Systems.

Photo shows — Happy after signing agreement to market Solar Power products in Australia and holding a typical unit are, second from right: Mr. Bob Willis, President, Solar Power Corporation of America; from left: Mr. Barrie Hare, Marketing Manager, Mr. Arthur Wookey, Product Supervisor, extreme right: Mr. Jim Thomson, Director and General Manager, Parts and Service Division of Joseph Lucas Australia Pty. Ltd. ■

Hamads

- Eight lines free to all W.I.A. members. $6 per 3 cms. for other amateurs and S.W.L.'s.
- Copy should be in block letters or typescript, signed and forwarded to The Editor, P.O. Box 150, Toorak, Vic., 3142.
- Excludes commercial advertising.
- Closing date for Hamads is the 3rd day of the month preceding publication.
- QTHR means the advertiser's name and address are correct in the current Australian Callbook.

FOR SALE

Swan 500 CX Transceiver W/Vox, 16 pole filter, AC PSU. Mint condition. 3 el. 20 metre Hygain beam. Ph. (03) 241231, (03) 206135.

Yaesu FT75B Transceiver, DC75B power supply and FV50C VFO. Additional crys'als and spares. All as new. $300. VK3VF, QTHR. Ph. (03) 723-3554 A.H.

HT Transformer 2 kV a side at 1 amp., $25.00. Chokes: 6.5H at 1 amp.; 10H at 100 mA; 3.2H at 1 amp. $10.00 each. All top quality and guaranteed as represented. VK5BI, QTHR. Ph. Cowell 39 Bus. 62 A.H.

Ten-Tec Model PM3 QRP CW transceiver. Rarely used due absences overseas, $75. Ross Treloar, VK2BPZ. Ph. (02) 259-5267 Bus.

Slow Scan Valve Monitor (shown in EA July '73), plus SSTV solid state sig. gen. and 931A scanner attachment, $100. FT2FB transceiver complete with 8 latest channels, $160. Gil Miles, VK2KI, QTHR. Ph. (02) 78-4237.

STC MTR25, 121 Series car phones, lo-band, FM with 3/20 final. Comp'ete except for cradles and mikes. Suit conversion to 6 FM or wrecking. Three available at $12 each complete with circuits. Jeff, VK3ZJS. Ph. (03) 37-1332.

Pye Reporter Units (2 only) converted 53.962 MC AM, with crystals for 12V DC operation (or direct AC with a 12V transformer), $25 each or $45 the pair. AWA FM transceiver on 73.332 MCS, 12V DC operation with PSU, cables and handset, $20.00. 250 FM AWA Box Stn. 73.332 MCS, complete with exciter, receiver and 2 x 125A. Linear and crystals, standard rack $50.00. VK4LN, QTHR. Ph. (071) 52-2675.

Swan Hornet TB-3H three element beam 10-15-20m, $55. Heath SB-220 linear, $450. Heath SB-610 monitorscope, $70. Heath GR-78 general coverage communications receiver 190 kHz to 30 MHz, fully solid state, $55. VK2AQW, QTHR. Ph. (02) 449-3638.

FT200 Transceiver with specially built AC PS/spkr. unit and all 10m and 11m xtals. $320 ONO. VK1DA, QTHR. Ph. (062) 63 3048 BH, 86 4699 AH.

FT101 (Mark II) 18 months old, 160-10 Mx (incl. 11 Mx), microphone, cables, etc. Excellent cond. $485. B. Baiholis VK3UV, 3 Connewarra Ave., Aspendale 3195. Ph. (03) 90 6424 (evenings only).

Yaesu FL DX400-FR DX400. Tx/Rx combination. $280 each with spare valves. Will consider selling separately. VK3PR, QTHR. Ph. (056) 62 2291 bus., 62 2711 AH.

Garrard Model 301 transcription turntable, 3 speed, perfect order, and MBH 600 ohm mag. PU. $55. "Gramdeck" tape recorder turntable attachment free with above. A. Roudie, VK3UJ, QTHR. Ph. (03) 874 5632 AH.

FT101 HF Transceiver fitted with optional fan and 160m band. Supplied with spare set of final tubes, mobile bracket, manual and all cables, mike, etc. $480.

FTV 650 6m Transverter with new tubes and recently retuned. With all cables to operate from FT101 plus manual, $120.

HF Long-wire tuner. Imported model with roller inductor and multi-turn dial, $40.

Set HF Helical Antennas. 160, 80, 40, 20, 11 and 10 metres, to fit Philips or Scalar VHF antenna base, $65.

Belcom 2m SSB Transceiver, modified to cover 144.00-144.48 MHz. With auto-changeover mast-head amplifier, all cables, mobile mount, manual, etc. $220.

Two Pye Bantam Solid State 2m Portable Transceivers. 2 watts FM out, complete with mic-speakers and circuit details. One with 40, 1 & 4. Other with 50, 1 & 4, $85 each.

Honda Generator. E300, 250 watts AC or 10 amps at 12 volts. Only used approx. 40 hours, $150.

Silent Keys

It is with deep regret that we record the passing of—

Mr C. J. ERWIN VK2YCE
Mr M. A. V. DARWEN VK4AV

Aluminium Portable Mast. 25 ft telescopes to 5 ft. With all nylon guys, pegs, etc., $15.

6 metre Beam. 3 element commercial design, 50 ohm feed, $10.

2 metre Beam. 3 element commercial design, side mounting, 50 ohm feed, $10.

Ray Roche, VK3ZRG, 380 Napier Street, Bendigo, Vic. 3350.

Vinten MTR13T with channels 1, 4, 40 and 50. Excellent condition, $75 ONO. David Farquharson, VK3ZOO, 29 Roberts Road, Belmont, 3216.

Yaesu FT2FB VHF FM as new, 6 ch. plus additional Rx and Jap freqs, $180 ONO. 14AVS 4 band trapped vert, sound working order — best offer. VK2VN, QTHR. Ph. (02) 498 2958.

Yaesu FT-75 Transceiver, 10-80m solid state, with FV50C VFO, complete with Yaesu AC and DC power supplies. Condition as new, few months old, $350. VK7MG, QTHR.

Trio Receiver, Model 9R-59D, 550 kHz to 30 MHz. $150. VK6LT, 19 Erinbee St., Riverton, WA 6155.

Solid State Transceiver modules for complete unit, comprising mixer, VFO, transmitter, audio amp., sidetone amp. TEN-TEC, brand new in carton with circuit details and cabinet. Gives 3 watts on 80-40-20-15 metres, $65. VK2BSJ. Ph. (02) 651 1316.

VHF Transceiver TCA-1675, good working condition with Ch B and 4 and 1. $50. VK2BSJ. Ph. (02) 651 1316.

Asahi AS-303A, set of 10 to 80 metre mobile whips, complete with loading coils, HD spring and ball mount. Beautifully engineered. $50 plus freight. Mal Sinclair VK2BMS, QTHR. Ph. (02) 407 0261 bus., 95 2382 AH.

AR7 Receiver with AC power supply and speaker. All coil boxes — higher bands may need alignment, $50. Don Brown VK5KT, 35 Highfield Ave., St. Georges 5064. Ph. (08) 79 4262.

WANTED

Decent morse key, PMG type or long-arm Admiralty model or similar. VK4SO, Box 1513, G.P.O. Brisbane, 4001. Ph. (072) 29-4668 Bus.

HF SSB Transceiver. This is your opportunity to donate some surplus equipment to a school YRCS station to help bring on more young men to enter our ranks. **Old Radios, TVs, Components,** etc. for use with YRCS courses in schools. Will pick up if you can't deliver. G. Scott, VK3ZR. Ph. (03) 89-0231 Bus.; (03) 88-4845 A.H.

CW or CW/AM Transmitter. Complete with power supply (home made preferred). VK3NK, QTHR. Ph. evenings (03) 93-1025.

Communications Receiver in good condition. Co age 1.6 MHz to 30 MHz. Contact J. W. Lacey, 6 Mawson Ave., Mt. Gambier, SA, 5290.

Socket for 4CX250B. Bill Currie VK3AWC, QTHR. Ph. (057) 92 2316 evenings only.

QSP

INFLATION EVERYWHERE

"The unaudited accounts of the Society for the six months to 31 December 1974 show a loss of £6,900 (around $12,000). The three main causes of this are" — increased cost of the magazine, salary increases, fall-off in subs income (due to admin. problems). Radio Comm. Mar '75.

VICOM INTERNATIONAL PTY LIMITED Manager: Peter Williams

ANTENNAE

MOBILE WHIPS:
RM-80 Resonator for 80m. $16.50
RM-40 Resonator for 40m. $16.80
RM-20 Resonator for 20m. $13.50
BM-1 Bumper mount $13. Spring $13.

HY-GAIN

203BA 3el 20m beam $168
TH6DX 6el yagi 10-15-20. $225
TH3JR 3el yagi 10-15-20. $135
18AVT trap vertical 80-10. $90
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RAC ANTENNA BY VICOM

	Model	Imp	Freq	VSWR	PRICE $
BALUNS	BL-50A	52	1.8 - 36MHz	1.3:1	16.00
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COAX SWITCHES (2 & 6 pos)	CS-2A	52	to 300MHz	1.3:1	23.00
	CX-6A(A)	52	to 500MHz	1.3:1	54.00
	CX-6A(B)	75	to 500 MHz	1.3:1	54.00
TRAP DIPOLES	III-N	52	7 to 28MHz	1.2:1	33.00
	AL48DXN	53	3.5 & 7MHz	1.2:1	33.00
	AL24DXN	52	7& 14MHz	1.2:1	26.00
	A-4VPN	52	3.5MHz	1.2:1	26.00
	A-8VPN	52	7MHz	1.2:1	28.00
LISTENER	L1	75	3 to 30MHz	—	15.00
BALANCED FEEDER	BTF-1	600	—	—	12.00

VHF ANTENNAE

Scalar Mobile Whips:
M22 2m fibreglass ¼w $7.50
M60 6m fibreglass ¼w $10.70
M21 2m steel ¼w $6.90
LINDENOW 2m 5/8 whip $21, base $2.60.
RINGO ARX-2 6db 2m gamma matched vertical $35
Extension kit to improve gain of the old AR-2, $12

ANT. ACCESSORIES

ME-1B SWR PWR METER 3-150 MHz $22
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AS-GM gutter damps 2m $7.50
SH-7E lightning arrester $14.90
CO-AX 58u 45c per m
RB 2m mast amp (144-146 or 146-148) $32
VICOM 6m and 2m low noise preamps $18.75
VICOM 70cm low noise preamp $22.50
Rotator — CDR ham II 240v $165

New!

Power AMP for 2 metres. carrier operated relay, infinite VSWR protection, 60 watts from 10 watts in, BNC connectors. $89

HF GEAR

TRIO TS-520 all band transceiver — $550.
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YAESU FL2100B Linear Amplifier. $388
YAESU FT75B 80w pep transceiver. SPECIAL this month $225 (3 only).
AC power supply $50
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YAESU FT-201 $505
ATLAS 210-215 solid state transceiver $570
ATLAS MARS model solid state transceiver $585
ATLAS 230v power supply for transceiver $150
ATLAS mobile mounting bracket $47

2 METRES FM.

AUSTRALIA'S BEST SELLING 2M FM rig — the IC-22A

IC22A 2M FM TRANSCEIVER replaces the IC22 and is identical electronically, but features a redesigned front panel with easier-to-read channel selection. It features switchable power 1 or 10 watts, 22 channels, solid state T/R relay, built-in PA protection, filtered d.c. voltages. The unit comes complete with mounting brackets, microphone, cables, etc, and three channels — 1/4/50. Price is $210 incl. tax and VICOM 90-day warranty.

DV-21 Digital VFO 146-148MHz.PLL synthesised system uses 59 ICs and 34 transistors. Can be interfaced with ICOM rigs or any rig with 45-18MHz multiplier. Price of $280 includes VICOM 90 day warranty.

ICOM IC-21A 10w base station or mobile. Features variable pwr control, adjustable deviation, built-in discriminator meter, S meter, SWR meter and modular circuitry. Includes 3 chs 1-4-50. Price $298. Extra xtals $8.50 pr.
KEN KP202 handheld 2 watts. Incls 4 chs (1-4-40-50) $150.
TRIO TR2200G handheld portable transceiver incl 2 chs, 1-50 $159.
SEWIA SV-230 mobile rig, runs 25 watts! Price $210 includes 3 channels, mic, cables and mobile mounting bracket.

2 METRES SSB

SSM-EUROPA B transverter $224
YAESU FT220 ssb-cw-fm solid state transceiver. Price of $480 incl mod to use fm repeaters.
TRIO TV-502 transverter $243.

We do not sell "C.B." equipment.

6 METRES SSB

YAESU FT-620B transceiver (new release) $460
TRIO TV506 transverter $212
ICOM IC-501 transceiver $445

70cm

SEIWA SU-710 70 CM FM transceiver runs 10 watts and is the ideal mobile rig — complete with 1 channel 435.0 MHz and 90-day warranty, $298.

YC-355D

YAESU frequency counter $250. Covers up to 200MHz max sensitivity 20mV. hi-lo input impedance.

MONITOR SCOPE. The YAESU YO-100 monitor scope can be interfaced with most transceivers and can cover a wide range of modes incl RTTY. A two tone built-in generator at 1500 and 1900 Hz adds to the versatility. Price $190.

D-60 FREQUENCY COUNTER including 2 metre prescaler $360

TRIO MC-50 desk microphone $44
TRIO MC-15 hand ptt microphone $12.50
MICROPHONE HEADSET for driving safety. $34

6 METRES FM.

IC60 fm 10 watt mobile transceiver incl 2 channels, mic, bracket and cables. $235

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